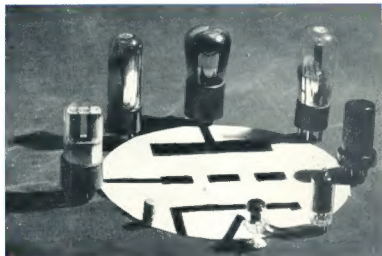


# A M A T E U R R A D I O

JUNE 1965



Vol. 33, No. 6

2/6

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Amateur Radio, June, 1985

# "AMATEUR RADIO"

JOURNAL OF THE WIRELESS INSTITUTE OF AUSTRALIA. FOUNDED 1910.

JUNE 1965  
Vol. 33, No. 6

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the Publications Committee.

## \*

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paid, in advance. Issued monthly on the  
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## \*

## OUR COVER

Around the symbolic figure for a  
triode has been arranged a series  
of triode valves covering the period  
from 1930 until 1965. Reading  
clockwise from the cathode symbol,  
the valves are: 6CW4, 6SN7GT/G,  
30, 4A15, 27, 6C5, 6C4, and a 654.  
How many readers can remember  
when each valve was first marketed  
and used in Amateur equipment?

## FEDERAL COMMENT

### \*

## W.I.A. ADMINISTRATION

The Wireless Institute of Australia is well known as the organisation  
within the Commonwealth which represents the Amateur Radio Service  
but it is also true to say that many amateurs are ignorant both as to how  
it functions and what it does for the Amateur. Although over 5,000  
strong, the membership is spread over a comparatively vast area requir-  
ing administration from a central organisation which at the same time  
must encompass liaison with local and State administration. This is  
achieved by the Federal Council composed of a member elected in each  
Division of the Institute whose special function is to act as the repre-  
sentative of his Division on behalf of its Council and members, the re-  
quirements being carried out by the Federal Council's ex-officio office—  
the Federal Executive. The Federal Executive, therefore, becomes the  
central organisation empowered under a Federal Constitution to carry out  
the work of the Federal Council on behalf of the Divisional Councils  
which in turn act on behalf of their members.

If you, as a member, have a complaint which affects Amateur radio  
in general and not a complaint of a purely domestic nature, then you  
need to know who holds the office of Federal Councillor in your State  
or Division. For the period 1965-66 the following are the people you  
should contact:

VKI Division (N.E.W.)	.....	Pierce J. Healy	.....	VK3APQ
VKE Division (Vic.)	.....	Michael J. Owen	.....	VK3ZEO
VKA Division (Qd.)	.....	Laurie Blagborough	.....	VK4ZGL
VLA Division (A.C.T.)	.....	Geoffrey M. Taylor	.....	VK3JMY
VKE Division (W.A.)	.....	Roy Chambers	.....	VK3RGY
VKT Division (Tas.)	.....	Ted J. Cruise	.....	VK7EJ

Knowing your Federal Councillor, you can then make contact with  
him direct (or through any member of your Division's Council) and place  
your problem before him. From his experience he will know whether  
the problem is one which can be attended by your local Council or  
whether it should be referred to the Federal Executive.

If your problem is one requiring Federal Executive action then your  
Federal Councillor will see that it is directed to the Executive in a  
manner prescribed for him under the Federal Constitution and you can  
expect to hear the result of this action in due course. The Executive  
for 1965-66 is composed of the following members:

Federal President	.....	G. Maxwell Hull	.....	VK3ZA
Federal Vice-President	.....	Harold Hepburn	.....	VK3APQ
Federal Secretary	.....	Peter D. Williams	.....	VK3IZ
Federal Treasurer	.....	Kevin Connolly	.....	VK3ARD
Federal Communications	.....	William T. S. Mitchell	.....	VK3JMY
Federal Business Manager	.....	Alfred Seedman	.....	VK3IE
Federal Contest Manager	.....	David Rankin	.....	VK3QV

For your information the Federal Executive has the power to co-opt  
people to carry out specific tasks and the following are so co-opted for  
1965-1966 to do just this:

Federal QSL Manager	.....	Ray E. Jones	.....	VK3BJ
Federal Awards Manager	.....	Alfred Kissick	.....	VK3JAG
Federal Historian	.....	George Glover	.....	VK3JAG
Federal Contest Committee Manager	.....	Don Rumble	.....	VK3RU

If you know who runs your Institute you can talk to them on the  
air because they are all active Amateurs, dedicated to their tasks on your  
behalf and on behalf of the Amateur Radio Service in the Commonwealth  
of Australia and its Mandated Territories. They want to help you and  
your hobby and look forward to your co-operation during the next 12  
months to make their term of office a fruitful one for the Institute and  
the Amateur Service in general.

—G. MAXWELL HULL, Federal President.

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## AN EFFECTIVE LOW-COST TRANSMITTER

HAROLD L. HEPBURN,\* VK3AFO

THE transmitter described in this article is the outcome of some experiments on efficiency modulation carried out by the writer during a search for a modulation system for a low cost, low drain, rig that might have application in the portable sphere.

Results over the 18-month period it has been on the air have been most satisfactory and it was felt that a brief description of the rig might be of interest to other readers of this magazine.

Whilst the unit described operates only on 160 and 80 metres, there is no reason why the frequency range could not be extended by using, say, the Colson type in the exciter section.

The more widely used methods of "efficiency" modulation where the modulating voltage is applied to electrodes other than the plate, normally call for a resting carrier which is about half of the full c.w. carrier level. Valve efficiency is low and in most cases the depth of modulation leaves much to be desired.

A screen modulation circuit described in the R.S.G.B. Handbook and known as the "gated screen" method appeared to be an improvement since the resting carrier is only one-fifth to one-eighth of the full c.w. level and claims were made that full modulation is obtained at all carrier levels. In addition, it is claimed that no over modulation could occur.

Allowing that their claims are correct—and experience with this transmitter has indicated that they are—then it appeared that considerable economies could be effected in the section of the transmitter which is normally the most expensive—the power supply.

## DESIGN CONSIDERATIONS

Taking as an example the old familiar 807 and looking at its plate power requirements under several conditions, some interesting facts emerged.

Let us suppose we have 600 volts of h.t. available, then if we decide to operate the 807 as a plate and screen modulated class C amplifier, a la hand book, we have to allow for a steady current drain in the p.a. of 100 mA. or 60 watts. If we decide phone is not required and we will be working c.w. only, we can reduce this requirement on the power supply by assuming that the transmitter has a 40% duty cycle—that is the "dit" and "dahs" only occupy 40% of the transmitter "on" time. This really does mean that we could use a 600v. 40 mA. power transformer to supply the p.a. plate provided we make the filter condensers large enough to cope with the peak current require-

If we go further and assume we are going to use the 807 for speech only and that we are going to use normal screen modulation, then we have to provide a steady current of 50 mA. (half the c.w. maximum) and a bit more for the periods when we are actually modulating. If we assume that the speech duty cycle is 20% (a bit high, but a nice round figure), then this is equivalent to saying that we have to provide for 50 mA. steady drain plus the equivalent of another 10 mA. to cope with the speech variation. Provided once again we provide good dynamic voltage regulation by making the filter condensers large enough to get away with a 60 mA. rating on the transformer.

Using "gated screen" we can do even better. Since the resting plate current is only one-fifth of the full current then we have only to supply 20 mA. average steady current plus the equivalent of another 20 mA. to deal with the speech power. Total is only 40 mA. or two-thirds of other efficiency methods. Note that this average current requirement is the same as the c.w. example, so that we can use either mode.

If we want to squeeze some more efficiency out of the p.a. tube we can

run at higher voltages. The 807 is rated at a plate voltage of 600 under plate and screen modulation conditions. This means it has to withstand a peak voltage of 1,200. Provided you keep the average plate dissipation within specifications, you can, in fact, run an 807 with 1,200 volts on the plate and still not over run the tube. Both R.S.G.B. and A.R.R.L. Handbooks publish design data for 807 and 1255 linear s.s.b. amplifiers at these voltage levels.

Bearing in mind the foregoing, it was felt that normal broadcast transmitters might well be able to provide the power for a 70-watt c.w./peak a.m. rig. The schematic of the completed transmitter is given in Figs. 1 and 2. Change-over switching is shown in Fig. 3, and meter switching in Fig. 4.

## THE TRANSMITTER

The r.f. section of the transmitter consists of a 12AT7 v.f.o., a 6AM6 untuned buffer amplifier, a 6V6 buffer/doubler/driver and an 807 final.

The 12AT7 oscillator is in a Franklin configuration since it enables the use of a two-terminal tank with one end earthed and because its output is constant over its tuning range of 1.75-1.90 Mc. The more popular Clapp circuit suffers from the disadvantage of giving less output at the h.f. end of its range. The lower, but more constant, output of the Franklin is overcome by the use of a 6AM6 buffer amplifier.

The 6V6 buffer/doubler provides ample drive on both bands; this drive being adjusted by the potentiometer in the screen circuit.

The 807 final uses a pi-tank output and the additional capacities required on 160 metres are brought into operation by a separate section of the band switch.

For netting purposes, h.t. is applied to the whole transmitter, but the p.a. is prevented from radiating by applying 105 volts negative to the screen. Since the negative supply is required

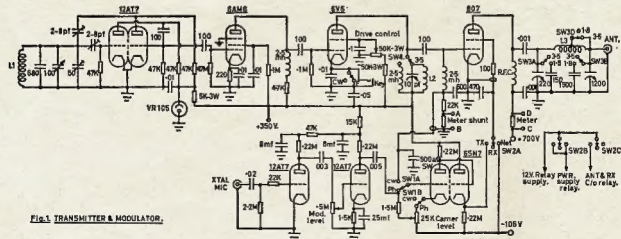


Fig 1. TRANSMITTER &amp; MODULATOR.

Page 3



# YAESU MUSEN FL-100B S.S.B. TRANSMITTER

*A Compact High Quality Mechanical Filter Rig*

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NEW MODEL

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Effective output level	..... -55 db. [0 db. = (one) 1V. Microbar]	
Frequency response	.....	200 to 10,000 c.p.s.

### OMNI-DIRECTIONAL DYNAMIC:

SIZE: 3" x 2-1/8" x 1".  
Cable: 12 ft. of P.V.C.  
Switch: on-off.  
Desk Stand. Clip folds for hand use.  
Colour: WHITE.  
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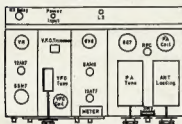
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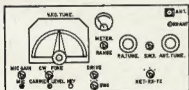
L1—V.f.a. oscillator coil, 32 turns 20 s.w.g. enamelled wire on 1" diam. ceramic former, 2" long. Wound under tension.

L3—Pi-tank coil, 807 plate. 28  $\mu$ H,  
tapped at 17  $\mu$ H.  
44 turns 16 s.w.g., 1½" diam. spread  
over 3 inches. Tap at 23 turns for  
80 metres.

REAR CHASSIS APPROX



CHASSIS-TOP VIEW



FRONT PANEL.

The initial steps of checking wiring, setting the v.f.o. range and setting up the various plate tanks are normal to any transmitter and will not be described in detail.

With the phone/c.w. switch in the c.w. position, the final is tuned to resonance and quickly loaded to 100 mA. Speed is increased here since under these conditions the power supply is overloaded. Then switch to the phone position and adjust the carrier level to 20 mA plate current in the 807 by means of the 6SN7 cathode potentiometer. Speaking into the microphone will cause the meter to kick up to around 60-80 mA, while a sustained whistle should get you up to nearly 100 mA.

With minor adjustments to the operating angle and a slightly more complex arrangement of the gating tube, the final would accept and amplify side-band signals. In addition, the efficiency of the tube would approximate to 70% rather than the lower levels associated with class AB1 or AB2. For further details on this interesting possibility, readers are referred to the March 1964 issue of "CQ".

Primary 8T-30 SWG. E.  
Secondary 28T-22 SWG. E.  
Osc.  
Primary 8T-30 SWG. E.  
Secondary 24T-22 SWG. E.

—Harry Major, WIA-L3102.

One of the I.Q.S.Y. projects is concerned with "whistlers"—the particular type of QRN observed on Very Low Frequencies. A co-operative effort in Antarctica, it is said, involves the use of a long wire—one hundred miles long. Although the connection between this and the short waves, with which we normally deal, may seem a little tenuous, it is quite possible that some energetic amateur type will be on the spot to try it out on DX! That should finally kill off the fable about using a 67-foot long wire.

—"The Short Wave Magazine," April, 1964

—“The Short Wave Magazine,” May, 1964

Persons desirous of being enrolled should communicate with—  
Secretary W.I.A., Victorian Division,  
P.O. Box 36, East Melbourne  
(Phone: 41-3535, 10 a.m. to 3 p.m.), or the Class Manager on either of the above evenings.

## WHY A BLACK BORDER ALL AROUND THIS PAGE OF "A.R."

Last month the Publication Committee reported that certain changes had to be made in the manner in which all notes for "A.R." were presented and by actually showing a full-scale layout it should assist all correspondents.

Our Printer has advised certain changes at his works, the result of which is that all correspondents must present their notes in a standard form. This means using quarto size paper, allowing a one-inch margin at the top, both sides and the bottom. Each page must be numbered and if type-written use double spacing please. If your notes are handwritten please leave a space equal to the depth of your handwriting between each line. If this is not done it is most difficult to edit your notes, and if they cannot be edited they may have to be omitted, something neither you nor your Committee wish to have happen. You may well ask why the need for such a wide margin, particularly at the top and bottom. The reason is quite logical: if this margin is omitted then your notes cannot be properly read when they are being set for the magazine, in fact, certain items at the margin edges (if not used) are obliterated by the typesetting machine. So please use a margin on all edges of your paper.

If you desire to have a hamad or a special item inserted in "A.R." please put it on a separate piece of quarto paper so that this piece of paper can be passed on to our printer. If your special item is included in the body of a letter it does make it difficult to pass this on to the printer.

Please help your Committee by (1) using quarto size paper only for all correspondence; (2) allow one inch wide margin around all sides of the paper; (3) if typewritten use double spacing; (4) or if handwritten allow adequate space between each line.

The rest of this space is used to feature the Publications Committee Reports (by so doing you can see exactly how a perfect copy for "A.R." should look. Compare it with your notes and see how much easier this layout is to read).

All inwards correspondence received up to the last mail on 10/5/65 has been published in this issue of "A.R." Technical articles were received from VK's: 2ADE, 3TD, P. Ward and ZL2APC. Letters were from: 9M2DQ and VK5BB.

The Committee were very sorry to learn that 5BB has to resign as DX sub-editor due to ill-health. We gratefully acknowledge his past help and wish him a speedy recovery. The question of the front cover design was actively discussed and it was agreed to proceed with idea of a new layout. The report regarding the Federal Convention was discussed and matters affecting "A.R." noted.

Advertising charges were considered and it was agreed that the current charges would be increased. It was furthermore agreed to issue a special edition of "A.R." in order that potential advertisers could be acquainted with the magazine.

Future operating costs were considered and it was agreed that as finances now permitted, your Committee would commence using a better quality paper for "A.R.," all readers will welcome this change.

The next "Call Book" is scheduled for issue the first week in September, and as far as practicable this date will be held for all future editions of this publication. Further advice will appear in future issues of "A.R." The Committee were pleased to note the increased co-ordination with Federal Executive who have issued their report. In addition a full report has been received from the Youth Radio Scheme.

You may judge your space needs by realising that this page, as set, would normally occupy one page of "A.R."

• P.S.—Please never address publications matters direct to individual members of the Publications Committee as they may be away, hence your notes, etc., are then delayed even further.



# THE ARC-PORT\*

## A Portable 80-Mx Transmitter-Receiver using the ARC-5 Receiver

E. H. MARRINER, W6BLZ

**F**EELING dull, tired and wheezy after hours of yakking on that smoking sideband ring? Why not a change and so some building before you forget what the parts symbols mean. Get ready for your vacation or a field day. Here is a compact 18 watt c.w. transmitter on the back of an 80 meter ARC-5 receiver, which is a lot of fun to build. The receiver is modified a bit by replacing the old mica capacitors, bandspreading the c.w. band and putting in a crystal controlled b.f.o. These modifications give you all kinds of room under the chassis to vent your imagination on compacting a rig into one package, including the power supply.

### ABOUT THE RIG

Mounting the transformer on the back apron of the ARC-5 just left room for three tube sockets. Searching around for tubes in the transmitter, this combination seemed to be the only logical choice: The pentode section of a 6U8 was used for the v.f.o. driving an Amperex 6360 final amplifier. This tube is not a baby, it will handle 100mA. plate current, fully loaded. It is a rugged tube and you don't have to worry about the plates getting red. The other socket was used for a voltage regulator.

Being pushed for room, the v.f.o. coil and tuning capacitor was mounted up in the front compartment away from the heat. It just fits, and with the bottom cover plate on the chassis, enough room is left around the coil. This Hartley oscillator is solid both mechanically and in frequency stability. The stability is increased by leaving the grid circuit on 1.7 Mc. and doubling in the plate circuit to 3.5 Mc. Small coaxial RG-174/U is used to connect the coil to the v.f.o. tube.

● Using an 80 metre ARC-5 as a base, the author has added a small transmitter with 18 watts input. The receiver is modified and is bandspread to cover only the C.w. portion of the band. Included is a special time delay keying circuit and an antenna tuner to help match these non-descript vacation antennas.



Side view of the rear section shows the three added tubes that comprise the transmitter. The power transformer is visible in the rear. The output coil, L3, and the link winding, L4, can be seen above the tubes and the compression trimmer is just visible behind the coil.

The voltage for the transmitter and receiver is switched with a relay to reduce the drain on the transformer. Using the triode half of the 6U8 as a keyer tube, voltage is supplied to the v.f.o. tube all of the time the 6360 cathode is being keyed. When you let go of the key, the voltages automatically switch to the receive position and the release time can be set for any interval of hold-in. In other words, to send, all you have to do is press the key. There are no switches to turn; the oscillator is on while you are keying, but goes off automatically when you stop.

The final amplifier, the 6360, is tuned using a combination compression type capacitor and varying the slug on the XR-50 coil, to cover the whole 3.5 Mc. to 3.7 Mc. band. The compression type capacitor can be obtained with a shaft and knob and is the only tuning capacitor that will fit in the tight space at the back of the chassis. Everything seems to really fit snugly and in an orderly fashion on the chassis.

The receiver portion is essentially the same old ARC-5 except that it has been bandspread to cover the 3.5-3.7 range and a crystal b.f.o. has been added. All of the old mica capacitors were taken out and replaced with 0.02 m.f. micas. The process of removing

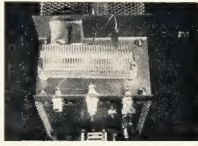
all of these parts, especially the old b.f.o. can, leaves an amazing amount of space underneath the chassis for new parts.

### RECEIVER CONSTRUCTION

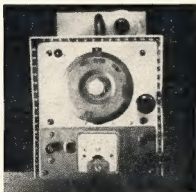
Before starting, haywire a power supply together on the bench and check out the receiver to make sure that it is working. When you make changes modifying the wiring, check it from time to time to see if it still works. Without going into too much detail, the first things to change are the large mica capacitors. The wires can be traced back to their source, clipped and a 0.02 m.f. ceramic soldered in its place. The output transformer can be changed and the new one mounted on the side of the chassis and at the same time make sure to put a 0.005 ceramic capacitor from the plate of the 6V6 (or 12A6) audio output to ground to replace the one removed. This prevents transients from breaking down the transformer insulation and also prevents audio oscillation.

Now after all of this modification and the receiver still says "A OK," you can try to bandspread the receiver. Leaving three rotor plates in the tuning capacitor will spread the band from 3.5 to 4.0 Mc. If you are strictly a c.w. nut, just one plate on the rotor is all that is needed. This is not too hard to do but just don't lose the 80 metre band in the process. A signal generator will help but is not absolutely necessary; a 3.5 Kc. crystal marker is just about needed. One plate will spread the band from 3.5 Mc. to 3.7 Mc. and a slight change in capacity will shift the dial. The final check should be made with the cover over the tuning capacitor.

Here's how to go about the change. First remove the slotted plate on each of the sections. Next unsolder the brace on top holding all of the rotors together. To get the plates out here is the magic formula. Wiggle each plate back and forth 50 times with long nose pliers and then give a downward push and it will roll right out. Keep your left hand on the shaft to prevent it



Rear view of the Arc Port shows the antenna tuner mounted on top, the keyer circuit, battery on the bottom of the rear apron.



Front view of the Arc Port an 80 metre transmitter-receiver. The knob on the lower right of the meter is the v.f.o. frequency. Above this is the volume control. The p.b. to the left of the meter is the cal. switch.

\* Reprinted from "CQ," December, 1964.

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from moving or the ball bearings will come out and it is fun to get them back in place. Now put a 82 m.m.f. silver mica capacitor across the oscillator and mixer coils. Across the antenna coil section put a 62 m.m.f. silver mica. This one has to be a little less because it has the small variable plus any capacity of the antenna.

Somewhere along the line the b.f.o. transformer can be removed and a crystal b.f.o. wired in. See Fig. 1.

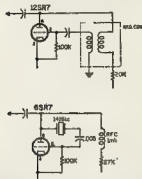


Fig. 1 Original ARC-5 b.f.o. circuit and the modified crystal controlled version. The v.f.o. is a Miller range 4502 and the crystal is an International FA-9 pigtail type cut to 1410 Kc.

## POWER SUPPLY

After you are satisfied with the performance of the receiver based on its operation with a temporary supply, we can proceed with the rear deck work. A plate, shown in Fig. 2, can be made to cover the rear deck after the deck has been nibbled out to within  $\frac{1}{4}$  in. of the chassis edge.

The supply voltage to the receiver section was reduced to 250 volts through a 5.5 k., 10 watt resistor. This is shown in Fig. 3. The screen voltage is reduced to 100 volts through a 25 k. series resistor. Since the 6K8 triode section (receiver local oscillator) was hooked up to the regulator tube for a steady voltage, the variation on the screens due to plate current drain at various gain settings was not stabilised with a bleeder arrangement.

A small loudspeaker of the type used in transistor radios was mounted over the 6SK7 tube. Its rating of 0.25 watts doesn't seem to be a problem. It is

loud and sharp for c.w. with its limited frequency response. An output transformer, 5 k. to 4 ohms, is mounted below chassis as shown in the photographs.

## TRANSMITTER SECTION

First wind the v.f.o. coil, tapping it six turns up from the bottom end. I scraped the wire and twisted it together and then brought the pigtail over to a terminal which was made by tapping a 4-40 screw into the base of the form. Coaxial cable (RG-174) was used to connect the coil to the tube socket. A 410-20 m.m.f. silver mica capacitor was used as a padder across the 100 m.m.f. variable tuning capacitor. With this combination the tuned circuit should hit 1.7 Mc. with the bottom cover in place. The coil can be mounted an equal distance between the chassis and the cover.

It is probably easier to wire the v.f.o. and 6360 amplifier tube before tackling the keying circuit and it leaves more room to work under the chassis. The plate circuit of the 6360 is mounted topside, and a compression type capacitor is used for plate tuning. This capacitor can be obtained with a shaft if desired, or if you have to use the screw slot type a washer can be glued on for a knob. Using the combination of the compression type capacitor and the slug adjustment, the range will cover 3.5 Mc. to 3.7 Mc., doubling in the plate circuit.

I find the keying circuit handy although many may want to use either a small toggle switch or a relay to change the voltages from transmit to receive. Using the keyer circuit, the relay is energised in the receive position to make a more foolproof circuit.

The advantage of the keying circuit is there is no switch to flip when you transmit. Just press the key and send, when you let go, the receiver comes back on after a delay determined by the setting of the 1 meg. delay control which is mounted at the back of the chassis. It is a subminiature type potentiometer. The small 15 volt battery mounts on the back of the rig in modified fuse clips for easy replacement. The drain is very light and should last the shelf life of the battery; ours has been in for months.

There is no trouble with the keying circuit once it is built. The value of the series plate resistor was set at 18K as this permitted enough current to flow to close the 10K d.c. relay. Relay coils other than 10K might need a different value series resistor. Also the keying 1N539 diode was used because of its high back resistance and low leakage to prevent the charge from draining away on the 0.2 m.f. holding capacitor. There may be other diodes that will work just as well but of the several tried, this one seemed to do the job best. A Mylar 0.2 m.f. should be used here as it has low leakage and worked out right. Other types might have more leakage. I set my delay to hold the v.f.o. on between words.

## TESTING

Most of the adjustments probably were made by the constructor as he went along but here is how I did it. When the v.f.o. and 6360 were wired up and finished I temporarily put on the bottom cover and set the dial to 3.5 Mc. The slug was tuned for zero adjustment on the v.f.o. coil and then shifted to about 3550 Kc. where the

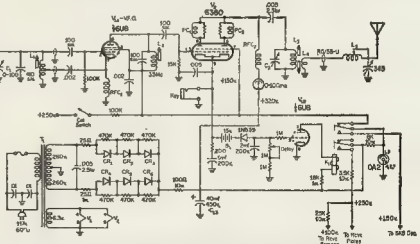


Fig. 2. Circuit of the transmitter, power supply and keyer that, when added to the ARC-5 receiver, makes up a neat 30 metre vacation portable. All resistors are  $\frac{1}{2}$  watt unless otherwise noted; all capacitors greater than one are silver mica in m.m.f. and less than one are die ceramics in m.f. unless otherwise noted. The 1 m.f. and 0.2 m.f. in the keyer circuit should be low loss Mylar types.

- B1-15 v. battery Burgess type Y16
- C1-100 m.m.f. A.P.C. type with  $\frac{1}{4}$  in. shaft
- C2-65-560 m.m.f. El Menco L-38 compression trimmer
- C3 CR2-0.25 amp. 400 v. p.l.v. diodes
- L1 36 turns 26 gauge e. tapped 5 turns up from ground, wound on National XH-50 form.
- L2, L3-38 turns, 26 gauge e. wound on National XH-50 form.
- L4-3-turn link of hook-up wire wound on cold end of L2

- L5-3 $\frac{1}{4}$  in. length of Aldrax 1030 gauge, (1 $\frac{1}{2}$  in. dia. 10 l.p.i.)
- PC1, PC2-5 turns 26 gauge tinned wire on a 47 ohm  $\frac{1}{4}$  watt resistor
- RFCC 1.5 mhy ferrite choke, Miller 6302 gauge or equivalent
- RFIC-0.5 mhy ferrite choke, Miller 4650 gauge or equivalent
- RI-D.p.d.t. relay with 18K coil
- T1-350-500 20 m.f. 5.3 v. at 3 a. Stancor FC-340A or equivalent

Fig. 2. Dimensions of the front and back plates for the ARC-Port.

plate coil was peaked up for maximum drive and output. The final tank circuit was linked coupled direct into a 50 ohm carbon resistor for this adjustment and field strength meter watched for maximum indication at this frequency.

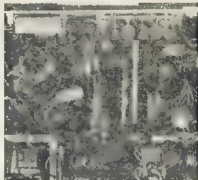
The grid circuit of the 6360 should draw about 2 mA, which is all that could be obtained from the v.f.o. Normally the 6360 uses 3 mA. of drive to obtain 100 mA. plate current. We could get 65 mA. with 2 mA. drive. More could be obtained by experimenting with the tap on the v.f.o. coil in conjunction with varying the grid resistor in the v.f.o. and 6360. Increasing the screen to its normal 200 volts does not seem to improve anything. A little

more could be squeezed out by using capacitor input filter but the difference in signal strength does not seem worth the regulation trouble.

The output of the final is coupled to an L network on top of the chassis. The idea is that any length of wire might be used when on vacation. In a motel, a 25 foot length is about all you can hang in the room while in a mountain cabin you could get quite a long run. You will have to experiment for the number of turns for your particular installation. Using 60 feet of wire strung out the window, I found the coil, tapped six turns from the coaxial input end, loaded it up to 65 mA. when the capacitor was peaked. This is 18 watts input.

This is enough power, on 80 metres to really get out. We have worked Arizona, Nevada and stations to the north of San Francisco with S9 reports on the 60 ft of wire.

The Gas regulator tube should never have more than 25 mA flowing through it and the 6K series may have to be adjusted. As long as the VR tube was there, we decided to use it on the local oscillator of the 6K8, to help stabilise signal drift. The pin connection on the oscillator coil is number five and the 150 volts regulated can be fed here when the wire is cut and another out to the relay.



Bottom view of the front section of the modified ARC-5 with the coil bank removed shows the v.f.o. tuning capacitor in the upper left corner with its XR-52 coil form to the right of it. The relay, K1, may be seen in the upper right corner.

#### THE CABINET

This nice looking cabinet is just a piece of do-it-yourself from the local hardware store. It was bent and slipped over the whole chassis. What could be simpler? The bezel was added for looks, and is one inch wide, and tapered at the bottom.

The total weight, with key and antenna, checks out on my bathroom scales at 10 lb., and easily going by air. Either way, driving or flying, on a trip this little rig will give you many enjoyable QRM free QSO's on the 80 metre band!



Bottom view of the rear section of the 80 metre portable transmitter-receiver. The upper right corner is occupied by the power supply with the diodes mounted on a board against the chassis flange. The key jack is located in the upper right corner also. The bottom right hand corner contains L3 and the miniature delay pot for the keyer circuit. The new receiver output transformer is in the lower left of the chassis.

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# The Historical Development of Radio Communication

## PART SEVEN—THE PRESENT SITUATION AND FUTURE TRENDS

J. R. COX,\* VK6NJ

### CHAPTER SIX

Wireless communication advanced technically under the auspices of three main contrivances; the spark-gap transmitter, the thermionic valve and, recently, the transistor. Within the framework of this trio other developments eventuated, amongst which were improvements in valve design, circuitry design, antenna effectiveness, the propagation characteristics of wave radiation, wireless telephony and broadcasting techniques. All combined, meant the advancement of radio as a whole. Wireless circuitry progressed from detection without amplification to Tuned Radio Frequency reception, which gave amplification at the frequency at which the signals were transmitted. Another innovation was the Armstrong regenerative circuit which made loudspeaker reception possible. Superheterodyne circuits gave higher amplification and greater selectivity, with the added facility of automatic volume control.

Mention of the system called frequency modulation has been made in Chapter Three,<sup>12</sup> and another modification to methods of transmission was introduced in the 1930's. The technique, called single sideband transmission, is finding increased use at the present time. It was realised that a fully modulated, amplitude modulated signal carried two-thirds of its power in the carrier and only one-third in the sidebands. This represents a waste as only 'The sidebands carry the intelligence to be sent; the carrier goes along for the ride.' As a means of using the transmitted power to greater advantage, it was decided to eliminate the carrier and transmit either one sideband or both (called suppressed carrier system). The carrier is easily reinserted by a heterodyne-type receiver for normal demodulation and it is claimed that the single sideband system can give an effective gain equivalent to increasing the transmitter power eight times. The system also has the advantages of conserving spectrum space and eliminating phase distortion.

So far this thesis has outlined the course of development through which wireless communication has passed to enable man to hear and speak at a distance. There is yet another opening of wireless communication which enables man to see at a distance. This is, of course, called Television.

Television, strangely enough, was envisaged before the advent of practical wireless communication, it being proposed as an adjunct of wire telephony. The history of television can be traced back to a Mr. Joseph May, a telegraphist in Ireland, during 1873.<sup>13</sup>

He noticed that sunlight shining on selenium resistors varied the current flow in a circuit of which they were part. May reported this phenomenon and from subsequent investigations came the 'selenium cell' which has the ability to transform light impulses into electrical impulses. Then arose a query. Could such a cell form an electrical 'eye' for transmission of different shades of light? After all, Bell's microphone was an electrical 'ear' which changed the voice into a varying electric current. Why not use the same principle to send pictures composed of varying shades of light?

A number of inventors accepted the challenge and amongst them was Maurice Le Blanc who, in 1880, proposed a system of mechanical scanning. He contended that mechanical scanning would break down the picture into many parts for transmission one at a time. Four years later, a German, Paul Nipkow, put the idea into practice by fabricating a perforated disc, the holes of which were arranged in the form of a spiral. When an image of the object to be transmitted was focussed on the disc, light from every part of the object fell successively on a selenium cell placed behind the revolving disc. The varying current was then to be sent to the receiving point where a device described by Michael Faraday and another spiral-punched revolving disc combined in action to return the incoming electrical impulses into the impulses of light which made up the original image. The arrangement failed because the selenium cell was not capable of producing sufficiently strong electrical currents. Amplification was possible after the arrival of the three-element valve and in 1899 Hans Knudsen used mechanical scanning to transmit photographs by wireless. For some years afterwards the Nipkow method was experimented with, but the mechanics of the device prevented progress to a really satisfactory standard of viewing. To achieve this the picture needed detail, contrast and no flicker, and it was realised that some means of electronic scanning was needed to produce this result.

As early as 1907 Mr. A. A. Campbell Swinton extolled the use of cathode ray tubes as a transmitter and receiver of television pictures, but it was not until 1923 that his idea was implemented. John L. Baird, sometimes referred to as the Marconi of television, successfully applied cathode ray tubes in that year to transmission and reception of shadows.

The first demonstration of true television occurred in 1926 when Baird transmitted the picture of an office boy named William Taynton. Television even reached across the Atlantic in February 1928 to a vessel S.S. Berengaria. Long wave transmission was used and the picture was not sharp or clear.

All-electronic scanning was made possible by the development of television cathode ray tubes in 1929 and

these were the direct result of Campbell Swinton's earlier investigations. They were produced for television by an English company, Electrical and Musical Industries Ltd., and marketed under the name of 'Emित्रon'.<sup>14</sup> In America around the same time, Dr. V. K. Zworykin, of the Radio Corporation of America, developed a similar device with which the first public demonstration of an all-electronic television was made in 1929.

The use of ultra short waves<sup>15</sup> from about 1930 onwards paved the way for transmission of more detail in pictures, and from 1932 television emerged from the experimental stage to that of public use. Television was installed in 5,930,000 homes in the United States of America in 1950 and by 1960 this figure stood at 48,200,000.<sup>16</sup>

Public broadcasting has not been superseded by television. In fact it is claimed that radio has more listeners than ever before! This could be because of the increased accessibility of wireless. Transistor receivers are small, convenient and can be taken anywhere. Radio broadcasting has changed its role to suit the new-style audience of beachgoers, sportsmen, travellers and the teenage population. For the most part there is not so much emphasis on quality of programme format as before television when radio was the home entertainment. The light tube-box type of programme now predominates.

There seems little doubt that television and radio will continue to exist side by side. With the extension of experiments in using satellites as reflectors, inter-continental transmission of television could well become as common as short wave public broadcasts are now.

At the present time wireless communication serves four main purposes; those of television, medium wave broadcasting, long range telephony and specialised communication such as teleprinter and picturegram services. Research now going on aims at the continued use of radio in at least these four divisions. The indications are, however, that the physical form of wireless equipment will become smaller and smaller. This trend is not unique to radio, as other useful objects have undergone a similar pattern of diminishing size as they were developed. The grandfather clock to ring-sized watch is but one example of this.

The trend towards miniaturisation is especially noticeable in field and domestic radio appliances and this move to smallness really started with the advent of the 1.5 volt sub-miniature thermionic valve. Reduction in valve

\* Government School, Yornup, W.A.

<sup>12</sup> See Appendix 4, The Process of Modulation.

<sup>13</sup> American Radio Relay League: 'The Radio Amateur's Handbook,' 1969, 36th edition, p. 30.

<sup>14</sup> From a fifteen-page paper, 'Television—A General Survey' by John L. Baird, addressed to the World Radio Convention, Sydney, April 1938, Institute of Radio Engineers (Aust.) op. cit.

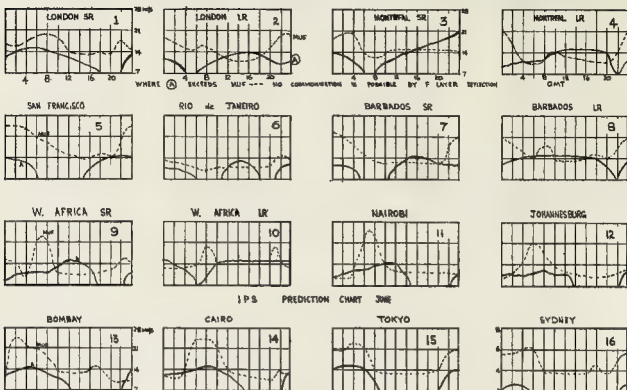
<sup>15</sup> From a twenty-two page paper, 'The Development of High Definition Television in Great Britain' by J. D. McGee, addressed to the World Radio Convention, Sydney, April 1938, Institute of Radio Engineers (Aust.) op. cit.

<sup>16</sup> Radio waves with a wavelength ten metres or under.

<sup>17</sup> United States Bureau of the Census and from a letter to the Library, James Street, Perth, 2nd July, 1963.



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size made overall size diminishment possible and by 1948 the reduction in equipment extent was quite noticeable.

Shockley, Bardeen and Brattain opened up the next stage of miniaturisation with their discovery of the transistor. The miracle of the transistor is that, despite its smallness, it can do better just about anything that the subminiature valve can do. Requiring only low voltages, this device has brought about a remarkable decrease in size and weight of communication equipment because these two factors are proportional to the voltage used, power handling capacity and heat dissipation. Transistor usage in communication equipment gave rise to associated techniques such as dip soldering and printed circuits, both of which facilitate simple assembly and reduction in volume. In addition, new lines of components in the form of miniature capacitors, resistors and switches made possible further reduction in size and weight when compared with subminiature valve equipment.

Thus transistors, themselves minute, together with associated components and construction techniques, have produced a remarkable shrinkage in overall size of equipment. The parts placement density of transistorised equipment is said to be capable of achieving 50,000 parts per cubic foot. By comparison, the "handle talkie" transceiver which is regarded as the ultimate in miniature valve designed equipment, achieves a parts density rating of 8,000 parts per cubic foot.<sup>12</sup>

A military demand for greater miniaturisation than 50,000 parts per cubic foot has launched a programme with the aim of micro-miniaturisation in field-type equipment. This need arises from the foreseen requirements of wireless sets to be minute in the event of nuclear blasts. The fulfilment of a programme in micro-miniaturisation depends upon a new concept in radio equipment called the modular concept, which has a minimum aim of 500,000 parts per cubic foot and the possibility of a further tenfold reduction.

The modular concept in electronics centres around the evolution of micro-miniature components of uniform shape and size which combine to form tiny modules. Each module is assembled as a micro-circuit capable of complete function such as an oscillator, modulator or any other block section of a receiver or transmitter circuit. There is a variety of assemblies and any number of interconnections of modular circuits is envisaged possible.

Modular circuits are constructed in wafer-like forms 0.310 inch square and 0.019 inch thick. Shapes of components as we now know them disappear. Resistors, for instance, are made by depositing metal or a metal oxide film, and fixed capacitors use ceramics, while inductors use toroids between two micro-wafers. Variable tuning condensers are replaced by highly sensitive, low voltage, semi-conductor diodes which exhibit variable capacity. Since the programme began in 1958, it has been found that all electronic parts now used in wireless equipment can be reproduced in the modular concept. It

seems very likely that the transistor set now considered small may soon be bulky by comparison with its modular counterpart.

The call for miniaturisation has brought about a change in the radio industry itself. In the past a designer could alone work to create new equipment, but now, because of the great complexity of the factors involved, the days of the sole planner are going. The modern designer has to consult with many specialists from many departments of science and industry to get the overall picture; the chemist, engineer, physicist and mathematician all have something to contribute. The transistor heralded the opening of the miniaturisation era in 1948 and this has now extended to a period of micro-miniaturisation. It is also the era of the specialist because, now, "the maximum amount of knowledge, the minimum equipment required" before new designs can be created and the minimum amount of knowledge is beyond the capacity of a single mind.

Small equipment needs a ready, reliable source of power and here specialised development in primary cells has assisted the fullest exploitation of miniaturisation possibilities. As well as a demand for size reduction in wireless batteries, there is an insistence upon a reasonably long life. Miniaturisation of the standard torch-type battery does not lend itself to this requirement, but new techniques have evolved tiny batteries which, in themselves, amount to a scientific breakthrough.

Later development of the electrochemical cell, using zinc and mercury, devised by Dr. Samuel Ruben during the Second World War, has proved of tremendous assistance. The advantage of the mercury-type cell is that it has a capacity something like seven times as much as the Leclanche torch-type cell. This means less bulk without loss of power availability.

An announcement of a major breakthrough in the actual conveyance of intelligence from one place to another was made in May 1963.<sup>13</sup> This concerned the Pseudo Random Intelligent Noise Transmission System. Labelled "P.R.I.N.T." it is a completely new concept in wireless communication although it does still use the electromagnetic spectrum and some conventional transmitting components. The system revolves around a new thought in tuning and modulation. Tuning depends upon time and not frequency as we now normally expect, whilst the modulator converts intelligence into a pulse code which is emitted by the transmitter. To receive the information the receiving set must start at the same time and remain in phase with the transmission. In this manner the pulse code is converted to our natural means of reading and hearing. Many such transmissions using different time starting points and different codes may be accommodated in the spectrum space of one conventional transmission. This system is very much in its infancy, but it does present a picture of overcoming the problem of overcrowding as more and more stations come on the air.

Another new concept called "Laser" is currently under intense research. The Laser is a new electronic device which has the ability to amplify light waves and intensify them into a single powerful beam. American scientists propose the use of such a beam in a communication system. This system could, in theory, use "a beam of light to carry all the radio, television and telephone broadcasts currently transmitted throughout the world."<sup>14</sup>

Since practical wireless began, its progress has been motivated by the need to improve on what has already been discovered. Each step forward has brought with it a new challenge. This is so today. From the turn of the century the challenge has been found in the need to perfect techniques and equipment, but it does appear that the zenith of technical perfection, with present modes of transmission, may be reached by the current programme of micro-miniaturisation. What then, of the period beyond? Wherein lies its challenge? The answer seems to be in the problem posed by the future need to accommodate many more wireless stations and their operation without mutual interference. This problem is becoming increasingly apparent and the time could arise where there will not be sufficient band space available. The wider use of single sideband transmissions will help overcome the question, but the real solution may only be found in a new mode of conveying intelligence from one place to another. The indications are that the radical P.R.I.N.T. and Laser systems may one day prove suitable for this purpose.

## SELECTED BIBLIOGRAPHY

- American Radio Relay League, "The Radio Amateur's Handbook", Rumford Press, Concord, New Hampshire, U.S.A., 1950, 1959, 1957, 1960, 1963.
- American Radio Relay League, "Antenna Handbook", Western Publishing Co., 1960.
- Ballantine, S. L., "Radio Telephony for Amateurs", Chapman and Hall, London, 1934, 2nd edition.
- Bucher, Elmer, "Practical Wireless Telegraphy", Wireless Press, New York, 1918, revised edition.
- Burke, Murray, J., "A Handbook of Wireless Telegraphy", Crosby Lockwood and Son, London, 1911, 3rd edition.
- Flaming, A., "The Principles of Electric Wave Telegraphy and Telephony", Longmans Green and Company, London, 1910, 2nd edition.
- Gardner, H., "Science as History", Hodder and Stoughton, London, 1960.
- Gibson, C. R., "Wireless", Rinehart.
- Gilbert, H. D., "Miniaturisation", Rinehart Publishing Company, New York, 1961.
- Institute of Radio Engineers (Aust.), "Proceedings of World Radio Convention, Sydney, April 1955", Radio Printing Press, Sydney, 1955.
- Kraus, "Antennas", McGraw-Hill Book Company, New York, 1950, 2nd edition.
- Lord, Sir George, "Oliver Heaviside", Longmans Green and Company, London, 1947, new edition.
- Lehman and Ferenec, "Analytical and Experimental Physics", University of Chicago Press, Chicago, 1963.
- Marconi, G. P., "Drake's Radio Encyclopedia", Frederick J. Drake and Company, Chicago, 1929, 3rd edition.
- Miller and Spreadbury, "Radio Circuits", London, 1945, 4th edition.
- Nikol and Hornig, "Practical Radio Communication", McGraw-Hill Book Company, New York, 1943, 2nd edition, 3rd impression.
- Randell, W. L., "S. Z. de Ferranti and His Influence upon Electrical Development", Longmans Green and Company, London, 1966, new edition.

(Continued on Page 22.)

<sup>12</sup> Laser is derived from a phrase that describes the device's function: Light Amplification by Stimulated Emission of Radiation. Two-page article by Bruce Shore in "Radio, Television and Hobbies", February 1963.

<sup>13</sup> Gilbert, H. D. "Miniaturisation", Rinehart Publishing Company, New York, 1961, p. 106.

<sup>14</sup> Ibid.

<sup>15</sup> "Amateur Radio," Journal of the Wireless Institute of Australia, May 1963, Melbourne, p.1.

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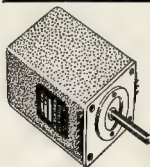
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LM55

# U.A. Federal President's Annual Report, 1964-65

It once again gives me pleasure to present to Federal Council the activities of the Institute in general and the Federal Executive in particular for the past 12 months. Although this year has been a quiet one for the W.I.A. in which it has had a chance to stabilise itself and take stock of its current and future prospects, it has not been without its ups and downs. On the 28th August, 1964, the Institute lost one of its most loyal and devoted members, Mr. E. E. VICKY, who died after a short illness. Jim was responsible in no small way for strengthening the N.S.W. Division, and for the interest at heart in everything he did. It was his great drive and enthusiasm that enabled him to buy and maintain the property at Dural and obtain a permanent home at Althorpe Street, Crown's Nest. He will be missed by all, especially Convention members, but particularly his own Division. The Executive also lost the services of the Secretary through ill-health for some three months during the year. This could not have occurred at a more critical time in that the last Convention minutes had to be prepared and the Secretary's job had to be carried out in his absence.

On a brighter note, the Executive were asked to once again co-operate with the Boy Scout movement in providing a radio station for the Australian Ambulance which was held at Rowville, near Dandenong in Victoria. Due to a sudden illness of Mr. Glover who was to organise the station, the Executive had to set up in a portable army hut on the site and the equipment installed. The station was in operation for the whole period of the jamboree and I believe it was an outstanding success. I personally wish to record my thanks for the great assistance to David and myself of those involved in the project, both members and Amateurs, and also to all the operators, erection teams and others too numerous to mention by name. Over the year of the jamboree, the Executive have been busy with the Christmas/New Year period. Cards are now being prepared to acknowledge QSO's with those local, interstate and overseas stations. The Executive have been busy with the period. I am sure that the effort was well worth the trouble as judged by the continuing increase in the number of QSO's received at the station. Personal letters of thanks have been sent to all those firms and Amateurs who assisted.

What speaking of VKSWIA I wish to report that further smaller items of equipment have been added during the year to the basic Delco transmitter and antenna system. The spare disposals from the Air Force have now been sold, and one of the receivers also. I believe it is essential that the spare disposals have modern standard equipment if the W.I.A. is to maintain liaison with overseas stations. I hope that VKSWIA will be on the air more regularly in the near future.

In dealing with I.T.U. matters I wish to say that the official Government report on the results of the 1964-65 I.T.U. Conference in Geneva has not yet been released, although basically the details stated in my last report to you are valid. The I.T.U. conference in Geneva has not yet been released, although basically the details stated in my last report to you are valid. The I.T.U. conference in Geneva has not yet been released, although basically the details stated in my last report to you are valid.

The activities of W.I.C.E.N. the Institute Emergency organisation, received a severe test during February and March, when heavy fires ravaged large areas of eastern Victoria, New South Wales and to lesser extent South Australia. The time of preparing this report, very little news is available from New South Wales or South Australia, but regarding Victoria, the network worked effectively and the mobile stations taking part and performing a most useful service to the community. VKSWIA was on the air for most of the period, and was the control station at Lush. I understand the authorities were most lavish in their praise for W.I.C.E.N. and very good for the amateur public who assisted the Institute. I trust other Divisions will take note and ensure they also have effective nets which can go in operation at short notice. These nets look to me to be well equipped on a sterling effort which has undoubtedly enhanced the Amateur image with the general public.

Membership figures for the W.I.A. show gradual increases as licensee figures continue to rise. I would like to be assured that Divisions are doing everything possible to bolster their membership particularly with the new licensee. A sound progressive programme of recruitment is the only way to achieve greater status in the eyes of the authorities. Again I must repeat that our ultimate aim should be to represent very much more than the membership figures (which include all grades of membership) and licensee as shown below for the last three years:-

	1963	1964	1965
N.S.W.	1,383	1,437	1,175
Victoria	1,205	1,221	1,206
Queensland	385	409	423
S. Australia	141	245	247
T.A.M.	210	311	316
W.A.	154	154	154
V.K.I. S.O.	180	180	180
Total	3,558	4,214	3,779

Estimated.  
I must once more express disappointment at the failure of some Divisions to forward their monthly membership returns. I ask all Federal Councillors to impress on their Divisional secretaries the importance of regularly forwarding these figures. The Federal Secretary must have correct figures on which to apportion financial payments and they are also required from time to time for official purposes.

The Youth Radio Club Scheme still continues to grow and new clubs have been formed during the year. The Executive have been asked by Y.R.C. organisers, Mr. Rex Black, VK3JA, give a detailed account of the activities. I take this opportunity to thank all those who are helping with the clubs and Mr. Ken Mettel, who regularly presents the activities with his notes in "A.R." I urge Divisions where the scheme is at present not functioning to start justifying to give this aspect of Institute activities every assistance possible, for the recruitment in this field will eventually make better public relations if it can be.

We have continued to liaise with overseas societies principally the A.R.R.L., R.G.B. and N.Z.A.R.T., in regard to regulations, publications and contests. The A.R.R.L. through I.C.A. has been most cooperative in regard to articles on each member society in through their regulations, operating procedures and various society matters. John Hunkin, the general secretary of A.R.R.L. and Secretary of the I.A.R.U., has assured me that one of the first societies to be written up in QST will be the W.I.A. He has also informed me that it is most likely he will be visiting Australia in the near future. I hope that during the next 12 months we may be able to have even closer liaison with these and other societies per medium of regular radio contacts. The sub-committee formed to enquire into the P.C.C. organisation (the Victorian Federal Councillor, the Vice-president and myself, has also received valuable information regarding assistance from the A.R.R.L. This report will be issued when all the facts have been sorted and examined.

The Executive in consultation with the P.M.C. Department in relation to regulatory matters raised at the last Convention, and all Divisions have been notified of the results. Some of the replies to the A.R.R.L. in our favour, and I consider these matters could be reopened during the next 12 months. Mr. Len Pearson, contrary to my last report, has now retired and his time has been extended until the latter part of this year. His likely

successor is not known at this stage. On the few occasions of liaison with the local Victorian Administration, their co-operation has been most helpful and appreciated.

The Publication Committee has continued its onerous task of preparing "Amateur Radio" and "The Callbook" for this year. The Divisions could give more assistance with articles and in seeking advertising. The delay in printing the Callbook this year cannot be placed at the door of the Publications Committee for it was due to lateness of checking by the various State controllers. The General Administration has been apologetic to me for the delay and I believe it will not occur again. Incidentally, our contract with the Department has been renewed for another five years for the publication of the Callbook. The detailed report by the Editor of "Amateur Radio" will give you a better idea of the problems involved. I wish to thank the Editor and his able assistants for the way in which they continue to give a lot of time and energy but very little outside help.

The usual Institute contests were held during the year and were conducted by the Contest Committee located in Queensland. Unfortunately for most of the year, only one member could devote time to this sphere resulting in lateness in publishing results, particularly in the case of the B.W.I. contest. I stand well in the May issue. Congratulations to South Australia who once again has won the B.W.I. trophy. All of our trophies were well patronised and interest maintained. The Rose Hill trophy has been repaired and refurbished, and it is proposed to refer back the R.D. trophy if necessary. The issue of awards has continued under the direction of the awards officer, Mr. Alf Klimek. The administration of the awards has been delayed due to the lack of a suitable design and motif. A draft is expected in the near future. The B.W.I. contest has been produced and these, together with the rules, will be printed during the next year.

As for the various Amateur bands have been spasmodic depending on contests and conditions for the largest amount of local activity. Contests have been arranged and activity but it is becoming more and more evident that Amateur A.M. is on the way out. There are always some A.B. stations operating when the bands are otherwise deserted. The voluntary sub-division of the h.f. bands has now been promulgated and I trust Divisional broadcasts will regularly publicise these frequencies. On the v.h.f. and higher frequency bands activity is as great as ever and distance records continue to be broken. VK2MM has taken the 144 Mc. record with a distance of 1,419 miles to New Zealand. VK1AE and VK7LE have been on the air at 283 miles. Congratulations to these and many others who continue to pioneer these frequencies.

The work of the co-opted officers has continued with little worry or fuss, and Messrs Klimek (Awards), Jones (QST), Straughair (Contests) and Coleman (History). (Historical, Black Y.R.C.) carry on their important jobs in the usual efficient way. I thank them all for their efforts and the job they have done.

Regarding the financial state of Federal Council, I refer to the audited statement prepared (Continued on Page 23.)

## WIRELESS INSTITUTE OF AUSTRALIA - FEDERAL EXECUTIVE

Balance Sheet as at 30th February, 1965

Liabilities		Current Assets	
Trust Fund	2,251	Commonwealth Savings Bank	£2,241
I.T.U. Fund	1,566	Trade Debtors	98
		Stock on Hand - of lower of cost or market value	173
Accumulated Funds -		Fixed Assets:	
Balance 1st March, 1964	21,800	(At cost less depreciation)	
Add:		Plant and Fittings	12
Surplus of Income over Expenditure for Year	443	Typewriter (No. 1)	73
Surplus on Revaluation of Equipment	31	Typewriter (No. 2)	10
	22,303	Duplicator	85
		Tools	10
		(At valuation)	
		Equipment	749
			£2,300

# ATTENTION V.H.F. OPERATORS

We have obtained the franchise for the GONSET CO., makers of the most advanced

## 6 and 2 METRE S.S.B.-A.M.-C.W. TRANSCEIVERS

See the write-up on page 64 of the March, 1965, issue of "QST" on the 2-metre GONSET SIDE-WINDER, a compact solid-state 20 W. P.E.P. 2-metre Transceiver for 144-146 Mcs.

We have these Transceivers on order already and their estimated retail price, tax inclusive, will be £270 (\$400 in the U.S.A.). Power supplies, A.C. or D.C., are extras.

Also on order a GONSET 2-metre Linear Amplifier using a 4X150A valve, with self-contained power supply, estimated at £250.

On special order the same equipment is available for 6 metres operation.

Orders for this most advanced equipment, offering the same operating convenience as now already standard on the d.c. bands, at comparable prices, can be made for expected delivery in July, 1965.

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Effective output level	-55 db. [0 db. — (one) 1V. Microbar]
Frequency response	50 to 15,000 c.p.s.

### OMNI-DIRECTIONAL DYNAMIC:

Plastic Diaphragm.	Swivel fits 5/8" 26 t.p.i. Stands.
Size: 4½" long, 1½" diameter.	Colour: TWO-TONE GREY.
Cable: 12 ft. of P.V.C.	

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# Book Review

## SHOP AND SHACK SHORT CUTS

By Donald L. Stoner, W2TNS

You could also call this publication the "Encyclopaedia of Hints and Kinks."

When this volume first came into my hands I began to wonder who would consider spending 50/- on such a book? As the pages were turned many old tricks were again revealed. Some of them with a new twist added to make them topical. Again I asked myself the question: Who would buy?

Yes, even after 30 years' experience in Amateur Radio and Electronics, in general I would say that this publication is a "gold mine" . . . It could save its purchase price the first time it is used and it will never go out of fashion, as so many books do.

The book is divided into 13 chapters, grouping tips under the following broad headings:

- (1) Improve your Shop Technique;
- (2) Tips on Crystals and Holders;
- (3) Coil and Condenser Hints;
- (4) Ideas for the Shack;
- (5) Improve your phone rig;
- (6) Hints for improved c.w. operation;
- (7) Receiver improvements;
- (8) Transmitter improvements;
- (9) Antenna improvements;
- (10) Power supply ideas;
- (11) V.H.F. hints;
- (12) For the mobile;
- (13) Test equipment.

There is something for everyone interested in construction projects, S.W.L.s . . . The younger generation of new Amateurs and the "old hand." There is something for all, grouped neatly into one volume.

Publisher, Cowan Publishing Corp., Port Washington, N.Y., U.S.A. Australian Retail Price 48/6, plus postage 1/6. Available from Technical Book & Magazine Co., Pty. Ltd. 295-299 Swanston Street, Melbourne, C.I. and McGill's Agency, 183-185 Elizabeth Street, Melbourne, C.I.

★

## WORLD RADIO T.V. HANDBOOK, 1965. 19th Edition.

This latest edition of the "Who's Who" of the radio and T.V. world has been completely revised and brought up to date in every respect—not only as an extremely comprehensive guide to the radio and T.V. stations in the world, but also in regard to the editorial content.

To anyone even remotely interested in short-wave listening, this book should be a must. Not only does it provide full information about the broadcasting and T.V. stations in each country of the world, including frequencies, power, QSL addresses and other relevant data, but a table at the back of the publication lists in order of frequency short wave stations in the world between 2180 Kc. and 26,080 Kc.

For the serious S.W.L. the book would be worth obtaining for this information alone.

Some of the best-known international personalities within radio and T.V. have provided interesting articles on such subjects as Interference, Jam-

# OSCAR III

# YOUTH RADIO CLUBS

After delays amounting to nearly 12 months, Oscar III was finally launched on 9th March, 1965, into a near polar orbit at a height of nearly 600 miles, just as hoped for.

Unfortunately, it was soon obvious that it was not working as well as expected, in that the c.w. beacon did not function; the telemetry beacon, although at fair strength, did not give data on the two temperatures, but only one (which one?); and the overall translator gain was down by about 20db. This meant that whereas a 30 watt transmitter and average type of relay should have been sufficient to relay signals through the translator, in actual fact the only QSO's made over transcontinental distances were by stations running near a kilowatt into high gain aerials tracked in elevation as well as azimuth.

It is suspected that the poor performance may have been because of damage to the satellite aerials which may have occurred during the launch or injection into orbit. In the VK-ZL area the only signals relayed over any distance were on c.w. and heard only for seconds. They included VK2ATN, VK7FF, VK7DK, VK7LZ, ZL3AA (running 500 watts under special permit), and a ZL1 (believed to be ZL1DE), who was heard briefly by VK1VP. There may have been others; we apologise for any omissions.

Overseas DX included W1 to HB9, DL3 to W6 also W6 to KH6, KL7 and LU3. Many of these QSO's were on s.a.b. and powers of over 500 watts were the rule.

At the time of writing (12th April, 1965) the telemetry is still in operation, having switched over to solar cells, when the main battery failed on 27th or 28th March. Although the telemetered voltage fluctuates between 11 and 13 compared with the original 20 volts soon after launch, it is quite possible that the beacon will continue to function indefinitely. If so, it is to be hoped that its orbits do not clash with Oscar IV and cause QRM.

Oscar IV, identical to Oscar III, but (we hope) fully serviceable, may be launched in September. Here's hoping we make those 4,000-mile 2-metre contacts yet.

—Bill Rice, VK8ABP.

ming and You, Solar Activity in 1965, Inter-continental Television, Short Wave Reception Conditions expected during 1965 "When to Listen for Satellite Signals," lists all satellites and their frequencies and also those expected to be launched during 1965.

Tables of interest include: The Most Suitable Metre Bands for 1965, Standard Frequency and Time Signal Stations, DX Programmes, Radio Stations Broadcasting in Your Language, World Time in All Countries, and Call Sign Allocations.

The book is a soft cover publication 64 in. by 84 in., containing 302 pages, and is available from most leading booksellers.

The big news this month comes from Sydney Teachers' College where a newly formed club (with leaders Mr. M. Henderson and Mr. Dick Smith) has 25 members. This is one of the most important breakthroughs we could have, and all Division Councils with any more than token interest in the Y.R.C. should make it a priority matter to achieve the same result. It is possible that this club will have 25 new Y.R.C.'s in 1966 in VK3. The president of the S.T.C. Club is Maurice Coleman, grand old man of a Dugout, who is hoped to have his A.O.C.P. early next year. Also judging by the number of lady members, it is thought some girls' high schools may N.S.W. will compete with St. Anna's and Melbourne Girls' Grammar. This likely expansion is great news. Would Publicity Officer "Penny please" not have your usual uncountable meetings the cold horrors!

Another important matter is the education of our political leaders in the possibilities of the Y.R.C. Any day now there will be screaming and shouting about the scarcity of capable technicians to look after the flying electronic laboratories now being purchased as war rearmament. If you care to educate M.R.C. or V.R.C. or Y.R.C. send a copy of the VK3 Division, has duplicated copy of the R.T.V. article detailing features of the amazing Soviet Vostok Training Scheme. If you send her a stamped addressed envelope marked "U.S.B.R. Info." you will at any time receive material to be written up with a covering letter explaining that the W.I.A. organises a valuable voluntary scheme but the W.I.A. cannot match the U.S.B.R. by itself. All States should join in.

The two regular stalwarts, Jim Webster and Ken Matchett, keep their bulletins going from VK3 and VK3. This is an important activity because it makes all the club leaders feel their own part in the scheme. Ken has included his 1964 Annual Report in VK3 in 1964, 53 Elementary and seven Certificate awards were awarded, including the first in the Primary School, Gworrle Park. Two new clubs are welcomed—Australian Air League Squadron and Melbourne High.

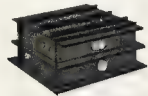
In VK3 there are more clubs registered than in 1964. This day. Full count is not available yet. Much club news is available though. At Gosford Gary Tippett has received a D.U. in the department of the Y.R.C. and is helping with the aid of Lindsay 200 At Arthur Phillip High Mr. Pearson (Manual Arts Master) has introduced a new course for 2nd year boys as a craft (all high schools note and suggest similar). North Strathfield Scouts are still active with call-sign 10HIA, helped by Len A.P.S. Epping Boys' High is being organised by teacher Jack 288. Hunters' Hill High has a club led by Science Master Mr. L. MacKenzie. Westmead goes on to greater strength under Keith JAKK. Kiama High under Roger 24IV has 18 members and meets every week. Wollongong Boys' High with Jim 17R is helping the Scout Unit with some transceivers and designing antennae. Punchbowl Boys' High is still organised by Secretary W. 24IV. The school grove North High has a predominantly junior group that keeps Rex 2YA into home. Inverleigh High still struggles with the transmitter of Roger 24IV. Kyogle Scouts with Graeme 30J are working on a transmitter. Peak Hill Central is a new club led by a Science Teacher, Mr. A. Toomey. Port Macquarie High is again led by Mr. Weir. Waverley College has formed a club led by Brother P. Anderson. Dorrigo High is a new club, too, led by Science Master Mr. R. Brown.

In Canberra, the Y.R.C. types had a lot of fun at the Canberra Radio Society's Winter Convention. Roger 1RD was first to locate the Hidden 7 Mc. against intense competition. Jim 17R won second prize in the Listening Contest. Andrew Davis won 18th month and may be on the air (VK1AD) with his 7 Mc. transceiver (home-brew) when you read this.

There is news also from both VK6 and VK4 of L.A.O.C.P. paces. In Wesley College Club, Perth, Laurie 62EA has four members who have been awarded the L.A.O.C.P. award. Peter Pemberton 62EP, Ray Godley 62EZ, Terry Broome and Mervyn Weiniger, the last of whom have passed L.A.O.C.P. and are waiting for call signs. In VK4 a De La Salle Club member and one from Grammar School (aged 13½) have L.A.O.C.P., but no details of the clubs are available. The club members are Maryborough State, Rockhampton Christian Brothers, Gladstone State, Cairns Boy Scouts and St. Patrick's (Mackay). 13CM.

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Size 6" x 4" x 5". Price £56, plus 12½% sales tax.

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200 mA. 120v. Bias. Size 4" x 4" x 5".  
Price £46, plus 12½% sales tax.



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ATLANTIC RADIO AND ELECTRICAL SERVICES, 38 OXFORD STREET, WOOLLAHRA, N.S.W.  
Phone 31-7811.

Our thanks to all Amateurs and SWL's who ordered or enquired about the National equipment advertised in May "A.R." Some lines still available from stock, others on indent for the present.

## SIDEBAND TRANSCEIVERS

**NCX3:** 3 band 200W. PEP. Full coverage of 80-40-20. LSB on 80 and 40. USB on 20. £297.

**NCX5:** 5 band 200W. PEP. Full coverage 80-15 and 28.5-29 Mc. with provision for 3 extra 10 m xtals. Selectable sideband. Receiver incremental tuning, etc. £539/10/-.

**NCXA:** Power supply 115/230v. a.c. input for NCX-3/5. £92/17/6.

## RECEIVERS

**NC121**, £122/10/-. **NC190X**, £214/5/-. for SWL or Amateur **HRO 500** for the discerning Amateur or professional, £1,212/10/-. **TERMS IF DESIRED.**

Also Webster "Bandspanner" and "Topsider" mobile antennas and mounts. Enquire Dept. SI 5.

**KEW K109 SWR Meter** £9 4 6 **KEW K101 Field Strength Meter** £6 1 6  
**KEW K102 Field Strength Meter** £7 19 6

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Brisbane, Q'ld.  
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Homecrafts-Tasmania,  
Astor House, 199 Collins Street,  
Hobart; and at Launceston.

H.F.

Sub-Editor: LEN POYNTER, VK3ZGP.

14 Esther Court, Fawkner, N.15, Victoria

ADDRESS CORRESPONDENCE FOR THIS PAGE DIRECT TO THE SUB-EDITOR

Everywhere on this page appear the latest details of v.h.f. records actually claimed up to April, 1965. There are a number of State sections without claimants. If anyone holds a record for the particular band, how about dropping a line to David Bunkin 3QV and making a claim for your State.

The activity reports appear to reflect the time of year—summer going to winter and the usual hibernation taking place. The Amateur bands are taking a thrashing from the one-eyed monster. More channels coming into operation means more viewers and of course more T.V.I. etc.

It was a pleasant surprise to have 6-metre DX over Easter, much to the surprise of many VK4's. That base station had a mighty signal in Melbourne. Have been making regular checks as time permits of the audibility of Inter-State Channel 3's base in Melbourne. Much to my surprise out of 40 checks made over a period of four weeks have heard signals from the other stations. I'm not sure whether Wagga is on the air but on May 2, around 1130, a religious service was copied with great ease until the critical time when the location of such service when the signal died and we missed out. The signal is never below the noise usually running 52-3 peaking at times over the 52 mark. I have been VK2 notes for news of their little problems.

Would be interested in reports of Channel 6 reception and also any most successful reports. Cannot wait until good sporadic E conditions to see what happens. VK3ZGP.

#### NEW SOUTH WALES

● Six-metre fox hunts have all the makings of becoming popular in Sydney. No doubt they are providing something different from the now very routine 2-metre event. Beaams are a problem and everything from loops to full-sized two elements are being used. These same members of our club have not so bad but a two-element on the side of the car of one heard caused amazement. At one stage the only place could swing it to it was a bearing was in the middle of a bus depot.

● The Group is expected to again run its own self-administration 2-metre event. It will allow v.h.f. operators to take part if there is no inclusion of such a section in the next year. Last year this was most successful for a long time. It would be a good thing if groups in other States were to do likewise.

● There are four v.h.f. activities each month in VK4. On the first Friday the meeting is held at Wireless Institute Centre, 14 Archibald Street, Crow's Nest. The 8-metre fox hunt is held on the second Wednesday of the month and the 3-metre usually on the third Wednesday. Usually on the second Sunday or week-end an event or contest is held.

● During April Sydney's fourth T.V. station took the air. Channel 10 was new, so the side went. To the v.h.f. operators all it was doing was more T.V.I. Harmonics of 8 metres, beats with Channel 3 and 3 metres and the noise produced by a car-borne T.V.I. and spots in converters. Most cases were not too bad and were soon cleared up.

Some of the v.h.f. fixtures and events in Sydney for the next few months will include meetings at Wireless Institute Centre, Crow's Nest, on June 3 and 7. A series of intended lectures are June, Transmissions, June, the combined Channel 10 and Channel 10 antenna system. August, Mobile Forums. A panel discussion on portable and mobile operation as against home station operation. The Mobile events will include 6-metre fox hunts on the 1st July and 15th August. The 2-metre fox hunts will be on 23rd June, 28th July and 28th August. The week-end events will be on 13th June, a car-borne side handing contest between 7 p.m. and 11 p.m. on Sunday evening. In July most likely a mobile event on the 11th. The August event will again see the v.h.f. groups' section to the R.D. Contest.

To keep v.h.f. operators informed a News Letter is produced and the weekly broadcast is at 7.30 on Sunday evening.

Fixed frequency net operation is slight at the moment. 146 Mc. has had some of its former support. Some of the 6-metre operators have three channels towards the high end of the band. de Tim 3ZTGM.

#### VICTORIA

Rand News. Six metres opened to VK4 and North VK3 over Easter week-end, 3 metres has had some openings to Western VK4, Eastern VK3 and Southern VK1. Activity on the whole has been rather spasmodic on all bands, the only news from 423 being that Cyril VK3AEZ now has a 124-element antenna on 423 and can be heard on nights operating C.w. on this band.

There are some 50-70 stations on the 6-metre a.m. net frequency 53.553 Mc. in Melbourne, also some stations in Albury, N.S.W., Mt. Gambier, S.A. and Ipswich, Qld. The 6-metre Lm. net on the international 6-metre 1st net frequency of 53.525 has about 10 stations and more are appearing as fast as they can procure equipment. Crystals for these nets are available from the VK3 Crystal Bureau, c/o Leo Fowler, VK3ZGF.

Two States have been linked by the engagement of Mary, daughter of Bob VKANG to Jim VK3HIF.

The 2-metre scrambles and fox hunts are still very popular in Melbourne, the scrambles on the second Sunday night of each month at 2045 hrs. attracting some 20-30 stations, the fox hunts on the fourth Wednesday seeing the attendance of six to ten car-borne people. The fox hunts start around 2000 hrs and finish between 2300 and 2400 hrs. after six to eight hours have been completed. See you again next month, chaps. VK3ZCK.

#### QUEENSLAND

During April three newsworthy events took place. They were a successful mobile night, some unexpected DX and the Annual Easter Scout Venture. Early in the month a mobile night was held. The contest was presented by 4ZLL, 4ZAX, 4ZEX, 4ZDI, 4UL, 4ZFP and myself. After the evening 4ZFP earned himself the title "Fred Finstons" as 4ZFP was voted the best fox for the evening. I think that perhaps every car passed within his feet without without finding him. The evening concluded with v.h.f. to "Ham-wise" well-known coffee lounge.

On Sunday, 18th April, the 6-metre band was open to VK4 for a short while around 1400 hrs. VK3ZMS was the only consistent signal heard. On Monday, 19th, the band was open from 0800 to 1300 hrs. VK's 3, 5 and 8 stations were heard. Roy VK3ZRM worked 18 stations. Roy was just about the only VK4

station apart from Lance 4ZAZ, who was able to work the DX stations. Unfortunately there were at least 15 VK4 v.h.f. stations on the band at this time handling traffic of an emergency nature at the 1965 Scout Venture. Consequently although many DX stations were heard, none were worked. If you called VK4QH but received no reply this is the reason. VK4QH was the headquarters station operating portable from the Beenhing Show Grounds running about 10 w. to a 6-element vertically polarised beam. (David, take a bow!)

The Scout Venture this year was a notable success. Most scouts agreed that the course was the hardest for some years. Many petrol turned up in unexpected places didn't they? Thanks to Bruce 42Z, who remembered that good things come in glass!

During the past few nights Neil 4ZNL and Shew 4ZSP have been heard battling away during Channel 9. Trevor 4ZTT and Walter 4ZFW are expected to get together to put a good signal on the air in the near future from St. Lucia way. Most activity on 6 metres lately has been from mobiles on the way to work in the morning. Everyone knows that if George 4ZLG is not on the bands, then he has run for the train and therefore it must be over 8 a.m.

Two well-known v.h.f. boys have taken the step and now have XYL's. They are Graham 4ZGN and Roy 4ZRM. George 4ZLG was the recording engineer at both weddings. Who was heard calling CQ during Roy's wedding?

Ken VK3OI has come to join us here in VK4. He is at the moment in charge of the local 100 kw. 6-metre transmitter for some nights of the week. He says he cannot hear a station at 2 metres up here. Why?

VK4 146 Mc. Beacon. The latest report from the Darling Downs indicates that the beacon transmitter is completely operational. The QTH of John 4ZWB, who is giving it a real workout.

An official call-sign is now awaited and once it has been obtained the automatic keyer will be constructed.

Following the request made by the group concerned for a number of odd type number tubes to be used as spares for the TX, a number of donors came forward. Many thanks to 4DA, 4TN, 4AW and 5ABA for contributing to the spares of the unit.

#### VHF/UHF STATE RECORDS

April, 1965

NEW SOUTH WALES:			
50 Mcs.	VK4ADE	to	VE7AAQ 7,300 miles
144 "	VK4ZM	to	ZL2AAH 8/1/65 1,410 "
432 "	No claim		
978 "	No claim		
1,215 "	VK4ZM		
VICTORIA:			
50 Mcs.	VK3JAL	to	VK3CF/1 4/3/65 46.8 "
144 "	VK3EA	to	VK3CF/1 4/3/65 46.8 "
432 "	VK3AEZ	to	VK3CF/1 4/3/65 46.8 "
978 "	VK3AEZ	to	VK3CF/1 4/3/65 46.8 "
1,215 "	VK3AEZ	to	VK3CF/1 4/3/65 46.8 "
QUEENSLAND:			
50 Mcs.	VK3ZAX	to	VK3ZAX 16/5/65 3,305 "
144 "	VK3ZAX	to	VK3ZAX 22/12/61 1,107 "
	No other claims.		
SOUTH AUSTRALIA:			
50 Mcs.	VK3SL	to	WTACN/VK3S 26/4/67 4,591 "
144 "	VK3ZJH	to	VK3ZJH 8/1/65 1,380 "
432 "	VK3AA	to	VK3AA 13/11/64 228.5 "
978 "	No claims		
1,215 "	VK3LA/5	to	VK3ZCR/3 4/1/62 1.0 "
WESTERN AUSTRALIA:			
50 Mcs.	VK3BE	to	JAHBP 30/10/58 4,480 "
144 "	VK3ZCN	to	VK3ZJH 8/1/65 1,390 "
432 "	VK3ZCN	to	VK3ZJH 8/1/65 1,390 "
978 "	VK3ZCN	to	VK3ZJH 8/1/65 1,390 "
1,215 "	No claims		
TASMANIA:			
50 Mcs.	VK3ZL	to	JAHBP 3/12/58 101.3 "
144 "	VK3ZL	to	JAHBP 3/12/58 101.3 "
432 "	VK3ZL	to	JAHBP 3/12/58 101.3 "
978 "	VK3ZL	to	JAHBP 3/12/58 101.3 "
1,215 "	No claims		
PAPUA TERRITORY:			
50 Mcs.	VK3AA	to	KH3BY 30/4/60 4,312 "
	No other claims.		

A complete spare kit of valves is now in hand except for Type No. CV187. A further two of these tubes are required to ensure reliable operation of the TX at all times. Therefore, cheap dig deep and check your junk boxes—you may be able to help the project. VK4ZPL.

#### SOUTH AUSTRALIA

Now that Oscar III has ceased to emit its characteristic H.I. and telemetry signals, activity in VK5 has again assumed its usual winter doldrums. It could be assumed, however, that perhaps this acute lack of activity may be due to increased constructional incentive invited to a large number at the most recent v.h.f. group meeting. This meeting, held on 2nd and 4th April, was most ably headed by Rob VK4RG and Bob VK5ZDM. The lecture delivered by Rob dealt with the pro's and con's of a.s.b., both theoretically and practically. A practical a.s.b. v.h.f. side-band transmitter was also outlined, and it is anticipated that the mass production of this unit will be undertaken by the majority as a group project. Bob's subject for the evening was centred on the reception of a.s.b. transmissions. His contribution for the evening was emphasised by displaying a receiver that he had modified especially for a.s.b. reception.

Apparently the urge by many to operate on the "gentlemen's" bands accounts for the increased slow morse transmissions available in VK5 to limited licensees. Heads down and tails up, change. It appears that VK5 has declared war upon the list of v.h.f. records. Official confirmation has been received on the VK5-VK3 2-metre contact between Andrew 6ZCJ and Colin 6ZHXJ to establish a record of 1,330 miles. Two other v.h.f. contacts by VK5 types are at this moment also awaiting official notification. These are the VK3-VK5 433 Mc. contact between John 3ZDM and Mike 6ZDR.

This contact was made on 18th March at 0658 S.A.S.T. Signal reports of R5 and 63-6 were exchanged. It is anticipated that this contact will constitute an Australasian v.h.f. record. The remaining contact awaiting confirmation made by Trevor 6ZIS and John 6ZJH to Trevor 6ZTM and Rick 6ZGQ on 31st January.

Garry 6ZK and Al 6EK having exploited what the low bands have to offer are reported to be considering a hasty return to the v.h.f. bands. 6ZHXJ.

#### WESTERN AUSTRALIA

The field day on 3rd-4th April kept a few brave flocks quite busy. There were three field stations set up and two cars were operating at different positions in the evening and again next morning. They couldn't stand the cold or the mozzies. The latter were 6ZAG and 6ZAZ. The former were 6ZBD, 6ZAG and 6ZDB, who finished in that order with approximate points 6,300, 4,500 and 4,100. 6ZAG scored 890 points for four possible contacts with 6ZCVM over 120 miles. Andrew was not very active due to T.V.I., and this is one reason for the scores being half as big as last time.

Six metres is very quiet nowadays, most of the guys are having an awful of 30 metres in the shape of VK5CD where a YL runs a most refreshing drop of ancient modulation. Now if we had somebody like that on 6 m the band would liven up considerably. After me, Charlie!

Viv 6ZCM is having trouble with his 2 m. rig. He can only be worked for the first half of any over and then he disappears. This trouble is not at all easy to fix. There may be a gremlin getting feendish glee by disconnecting the other bloke's receiver after a certain interval. I'd try timing him, Viv.

6ZAG.

## Correspondence

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publishers.

Editor, "A.R." Dear Sir,—May I please request space in your letters column to explain to my many Australian Amateur friends that the sudden disappearance of 6M2DQ from the bands is not due to any calamity up here but because I have now been granted six months' leave and am off to the old country.

I would like to acknowledge the hundreds of QSOs which I have had and enjoyed immensely with the VK Amateurs. These are troubled times but I have only to get on the Amateur bands and feel the sympathy and support from you chaps "down under". I had hoped on this leave to be able to see Australia and New Zealand but I have to return to England on business and hope to be able to visit your wonderful country.

Hope to be back as 6M2DQ by October and in the meantime if my VK friends hear a weak signal filtering through from 6ZKPY in a bad location, then please don't forget that is Yours truly,

Jimmy 6M2DQ.

South-western Zone Convention will be held in Warrnambool.

Final arrangements will be given over VK3WI broadcasts.

VK3WK President.

VK3ARJ Secretary.



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("Mullard Outlook", Jan/Feb 1965)

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Sub-Editor, Chas. Abernethy, WIA-1211.  
30 Urunga Parade, Miranda, N.S.W.

For those members interested in the Murrumbidgee Radio Club, the following is a list of member stations of VK3APK VK3A AHO, ACS ADO, AFJ, AFQ, AGZ, AHK, AKB, AKM, APO, APL, APL, AVU, AWO, AXC, BM, CB, CN, CW, EM, FF, JI, JL, KE, KV, LC, LZ, MX, OF, OT, PW, RN, SK, TE, TG, VJ, XK, XS, XV, ZCB, ZCM, ZIM, ZIQ, ZIX, ZMQ, ZNZ, ZNS, ZOO, ZOP, ZPC, ZPR, ZRD. Any member who requires further information please write to Greg Earl, 7 Gordon Crescent, Rock Bank, S.S. Victoria, who is handling the SWL section of the Award.

During the past 13 months it has been my pleasure to reply to all mail received at this QTH. Now, owing to the big increase each month, I find that it has become rather costly. As from the 1st June I would ask members who require a reply to please include in their letter a stamped address envelope.

# **SUPERHETERODYNE RECEIVERS**

The superheterodyne receiver, invented during the first world war by Major Armstrong, achieves its unique advantages over the TRF receiver by converting all incoming carrier frequencies to a fixed, lower value (the intermediate frequency). At a fixed intermediate frequency the amplification can be designed with maximum stability, selectivity and sensitivity and are not subject to the variable amplification and instability of the TRF. The conversion of the received signal frequency to the lower IF frequency is achieved by heterodyning or beating the carrier frequency against a locally generated frequency.

As in the TRF receiver the modulated RF carrier signal is coupled to the mixer stage, which is coupled to a tuned RF stage, where the initial signal selection and amplification takes place. Because of the high gain and selectivity of the mixer stage, the tuned RF stage is sometimes untuned, and occasionally it is omitted altogether.

The frequency of the RF signal is coupled to the input of the mixer stage, where it is combined with the output of a local oscillator. The two frequencies react together in the mixer and produce an IF signal to the difference between the RF signal and the local oscillator frequency.

The frequency of the local oscillator may be either above or below the RF frequency (in practice it is usually above the signal frequency). The signal from the mixer is then amplified by several stages of fixed tuned IF amplification, and is coupled to the input of a detector stage, where it is demodulated. Since the circuit has plenty of gain, a diode detector is usually used because of its low distortion and excellent audio fidelity. The audio signal from the detector is amplified by one or more stages of audio amplification until it is sufficiently strong to drive a loudspeaker. The loudspeaker converts the audio signal into sound waves corresponding to the original sound of the transmitter.

# **NEW SOUTH WALES**

During April excellent signals were present on the 15-metre band, in fact, they reminded me of the conditions that prevailed some years ago. As the weeks go by, my experience increased activity on all the frequencies, well, let's hope so, for at least it is of great interest that is lacking among the VK2 SWL's.

It is with great regret that we record the passing of L2321 Barry Smyth. Barry was a member of the VK2 group, and was one of the oldest members, and has always been ready to assist with the knowledge that he possesses. To all his relatives we extend our deepest sympathy.

Mac L2074 Thanks for the S.A.S.E. Latest cards and card P23 are VOX/MJ. Don L2022 has moved from Albury and now resides on the Blue Mountains.

Sed L2523 is busily studying for the A.O.P.C. term which is about a week or two away from down in the south-west.

Allan L2185 Thanks for compiling that let us know that it is better than we thought.

Ray L2278 During April logged UA's, UB's, UT's and UQ's, and received cards from OEL, KW6 VET, LUD, VQ8, KG6 and HM. Thanks for your interest in the card swapping section.

# **VICTORIA**

From reports by VK, SWL's band conditions seem to have been most favourable on 15 and 20 metres, whilst a few openings on the 10-metre band were present on several occasions.

At each general meeting of the group there is a prize being given for the best log book submitted, the first of these prizes was won by G. Armstrong. The group and an inspection of a Melbourne newspaper office and a broadcasting station for early in May. We hope that all members enjoyed this technical visit. The monthly radio construction evening has been producing some interesting receiving sets ranging from expensive commercial types to the simple two-valve resistor-type type. One of our female members was noted at one of these evenings with a newly constructed receiver - Jan L3002.

How many readers of "A.R." are aware that VK3IAHF is a famous entertainer who now associates himself with a leading circus, which operates between Melbourne and north Queensland. Bob operates almost daily from a caravan, look for the 20-ft bamboo mast atop a caravan near the time the circus visits your town - Eric L3042.

Warwick L2121 spent the Easter period at Echuca, where using a dipole at 8 ft. managed to log two new countries, i.e., ZS8BPP/ZS8, and CT2AM. Cards received from OK1, MP4, FYI, GC3, K8B, SM5, OBI and CT1.

Greg L3139: Cards to hand, OAA and JAS. Eric L3042: Latest cards to hand, CRA, DU7, EPT, F04, KZJ, FYI, VK1, VKH, VQ8, V83, X43, B54, 9M4 and 9M5. Heard recently, 15 MC, VK5KO, ZL3OX, 3.5 MC, WIA, VKV4: 7 MC, UIR, G314, 14 MC, VQ3 Norfolk, VK3 NG, Noel L3101: Heard VQ8, 6YA, JA7, OH4, W4, DO1, 25B and BW1, with a QSL from FYI. Lloyd L2314, whilst at Echuca during the Easter week-end, used a 5-ft. vertical and heard 60 countries. Recent cards to hand, FYI, VQ8, OAA, G16 and Z32.

# **QUEENSLAND**

With the cooler weather approaching 30 metres usually folds up, and by July is useless. On the other hand, 2.5 Mc. is very good, and the ageing of QRN, but no DX other than VK and ZL with an odd W. By June we shall have the W in on 15 and 1.5 Mc. A very good log on the 10-metre band was experienced with all and sundry being heard. It was a real old-fashioned opening, no surge, good and clean, and the old time 10-metre band is coming up, but weakens after lunch. Antarcica have been strong on a Sunday afternoon. After three or four years of no DX, we have once again heard VE and XL - Affon L2136/VK4.

Affon L2136/VK4 Latest QSL's to hand, PORAT, whilst these heard were VQ8, TQ9, UVA, UNV, TH, CP6, LA7, KR8, KM6, KL7, UL7, VJ8 and JA's.

# **SOUTH AUSTRALIA**

Although a band condition report is not to hand from VK3, I would say that by the stations heard by LS's, the openings on the 15 and 20 metre were fairly good, whilst a few stations were heard on the 10-metre band also.

Alan L5003: Latest QSL's, KIM, UMS and W3X.

Tony L2573: Heard recently FK3, CR3, OAA, T13, JA3, SM13, U23, YJ8 and W's.

# **WESTERN AUSTRALIA**

Early in May the bands fluctuated somewhat with Europeans way down on 31 metres whereas they are usually very strong. Around 1800 G.M.T. when 20 metres was quiet, there was a number of W's, with the majority practically on the same frequency calling ZL4JF. During the afternoon 15 metres was good, it is sure strange what can happen when the sun starts playing up - Peter L2621.

Bryan L2623: Heard recently ZEX, KR, CR7, JA5, VZ7, W3, K2, WB2, OAA and W3.

Allen L2629: Heard YJ8, JA3, JA3, SM4, IS1, VJ5 and CR8.

Geoff L2630: Logged recently YAL, BM4, VQ8, W44, IL, OAA, K18 and W3.

Peter L2631: Latest getting across the DX by calling JAL, UAG, JA7, VQ8, ZEX, UL7, ZEL, CR7, TQ7 and ZS6. QSL's received, CR7, DM, EP, GW, JA, LA, MP4, OZ, SP, UAY, UVS, UT's and many others.

# **TASMANIA**

During the past month 20 metres has been very noisy and after 1800 hrs virtually closed, whilst 15 metres showed promise of good openings with JA's and W's being heard around 1800/1815 hrs. Around 1815 hrs, a W appeared on the 15-metre band, fading from S9 to S2 at irregular intervals, and peaked from a N.N.W. direction from Hobart, no CQ's or contacts were heard.

# **GENERAL**

QSL cards from VK6GS, 1954 operation in Antarctica should be in circulation by June, whilst VK2AGH has been busy mailing out QSL's for VK4YK, 1954 Willis Island operation.

From WIA-1Q comes news that the 20-metre band has improved considerably, with VK2 and VK3 signals coming in at a very good strength.

Gillies Wyllie, 33 Glenpatrick Road, Elderslie, Renfrewshire, Scotland, would like pen friends, who may write to: JAI-2845, Iase Numa, 1-38 Setagaya, Setagaya-Ku, Tokyo, Japan; WPEKOR, George Hill, 11 Miller Street, Saddle Brook, New Jersey, U.S.A.

I would like to thank all the regular contributors for their letters, bits and pieces that are all necessary to make this page possible. Be with you next month, but remember, add courtesy and consideration for other people's rights and everyone will be better off.

# **S.W.I. DX LADDER**

	Countries	Conf	Hrd	Zones	W States
E Treblecock	101	101	101	101	101
P Drew	101	101	101	101	101
A Westcott	101	101	101	101	101
M Hillard	101	101	101	101	101
R Kearney	101	101	101	101	101
G Biri	101	101	101	101	101
L James	101	101	101	101	101
R Kearney	101	101	101	101	101
W Smith	101	101	101	101	101
N Harrison	101	101	101	101	101
Raferty	101	101	101	101	101
R Harrison	101	101	101	101	101
B Prosser	101	101	101	101	101
B Mackintosh	101	101	101	101	101
T Corbin	101	101	101	101	101

# **Westlakes-Hunter Branch**

Field Day, Queen's Birthday Week-end, Sunday, 13th June, at the Westlakes Radio Club, Teralba, N.S.W. Right at Teralba Railway Station.

40 and 2 metre Transmitter Hunts for Pedestrians. Competitions. Hot food available at the caterers.

Admission 5/- (to aid Youth Radio Scheme Funds).

# **W.I.A. D.X.C.C.**

Listed below are the highest twelve members in each section. New members and those whose totals have been amended will also be shown.

# **PHONE**

	Call No.	Call No.	Call No.	Call No.
VKIMS	34	314	VKIADE	95 231
VKASB	45	320	VKIDG	61 232
VKURU	1	307	VKIDK	61 233
VKIMX	43	304	VKISWL	14 234
VKIAHO	31	300	VKIDR	12 235
VKJFT	31	288	VKIDATN	30 236

# **C.W.**

	Call No.	Call No.	Call No.	Call No.
VKIDB	35	300	VKIDG	71 237
VKICK	35	300	VKIDR	15 238
VKIDL	8	300	VKIDR	3 239
VKIDP	39	300	VKIDR	70 240
VKIDR	31	288	VKIDR	12 241
VKIDR	15	288	VKIDR	30 242

# **Amendment:**

VKJFT 45 235

# **OPEN**

	Call No.	Call No.	Call No.	Call No.
VKIADE	28	322	VKIADE	8 300
VKIDR	8	312	VKIDR	77 287
VKIDP	32	308	VKIDR	43 271
VKIDR	32	308	VKIDR	30 272
VKIDR	32	308	VKIDR	18 273
VKIDR	78	304	VKIDR	83 242



# W.I.A. FEDERAL PRESIDENT'S ANNUAL REPORT, 1964-65

## HISTORY OF RADIO

(Continued from Page 12.)

- Rose, R. L. S.: "James Clerk Maxwell": London, 1948.  
Scott-Taggart, J.: "Thermionic Tubes in Radio Telegraphy and Telephony": Wireless Press, London, 1924, 2nd edition.  
Scruggie, M. G.: "Foundations of Wireless": Iliffe and Sons Ltd., London, 1960, new impression.  
Slurberg and Osterfeld: "Essentials of Electricity for Radio, Television".  
Wolfe, E.: "The Junction Transistor and its Application": Heywood and Company, London, 1958.

### BOTHWALL

- "Amateur Radio": Wireless Institute of Australia, Melbourne, monthly issue.  
"Application Guide—Silicon Power Transistors": Radio Corporation of America, 1959.  
"Application Guide—Silicon V.H.F. Transistors": Radio Corporation of America, 1959.  
"Introduction to Junction Transistors": Radio Corporation of America, 1959.  
"Journal of the Society of Great Britain": London, July 1963, Vol. 30, No. 1, 58 pages.  
"Mullard Outlook": Australian monthly issue.  
"Radio, Television and Hobbies": Sungrave Press, Sydney, monthly issue.  
"The Transistor—Miracle Tool of Electronics": United States Information Service, 1959.  
"Transistor Fundamentals and Applications": Radio Corporation of America, 1958.  
"Twelve Inventions That Changed the World": United States Information Service, 1960.

### APPENDIX FOUR

#### The Process of Modulation

Modulation refers to the process whereby the carrier wave is varied in accordance with the speech or music to be transmitted. There are two ways of modulating a carrier wave: by amplitude modulation and by frequency modulation.

In amplitude modulation the carrier wave consists of a series of waves of constant amplitude. When speech or music is to be

transmitted the Federal Constitution without which I feel the Institute can not make further headway. With a new Federal Constitution and the fruition of some other ideas on improving the Administration, I feel the Institute will progress and attain a status worthy of our long history.

—W. S. Mitchell.

transmitted the amplitudes of successive cycles are varied in accordance with the instantaneous values of an audio frequency voltage derived from the sounds by means of a microphone and amplifier.  
With frequency modulation the amplitude of the carrier wave remains constant and the frequency varies in accordance with output received from an audio frequency source such as microphone and amplifier.  
(The End)

★

## NEW CALL SIGNS

FEBRUARY, 1965

- VK3ADJ—A. A. Stewart, 10 Gore St., Arncliffe.  
VK3BCI—G. Kempton, 44 Robinson St., Kogarah.  
VK3BCH—J. K. Ridgway, 1 Massey Place, St. Ives.  
VK3BJD/T—B. J. Dwyer, 38 Highgate St., Berley.  
VK3BKM—K. J. Kofink, 31 Leichhardt St., Leichhardt.  
VK3BWP—P. V. Inglis, 13 Knapsack St., Glenbrook.  
VK3BWI—W.I.A. N.S.W. Division, V.H.F. and T.V. Group, 14 Aitchison St., Crows Nest.  
VK3ZIM—P. G. Mack, 18 The Crescent, Epping.  
VK3ZKL—L. G. Moffatt, 86 Bathurst Rd., Orange.  
VK3GL—T. J. Dearn, Block 21, Stanley St., The Basin.  
VK3PB—D. J. Kenner, 22 Clarence St., Eastern Wick.  
VK3AAX—J. F. Westley, Lot 12, Cuthbert St., Heathmont.  
VK3ZBI—L. A. Grant, 13 Stott St., Box Hill South.  
VK3ZGA—A. D. Swinton, 760 Waverley Rd., Glen Waverley.  
VK3ZHI—G. C. Finlay, 84 Carpenter St., Brighton.  
VK3ZPT—A. R. Thomas, 47 Elphinstone St., West Footscray.  
VK3ZTV—A. G. Lyell, 616 Bell St., Preston.  
VK3ZWT—G. A. Wallis, 19 Corby St., North Balwyn.  
VK4HL—F. A. Herrmann, 30 Jellicoe St., Too-woomba.  
VK4JS—J. A. J. Gravina, Flat 1, "Dorelle," 125 Dorchester St., Highgate Hill.  
VK4ZDP—D. Parker, C/o 1 Farrington St., Alderley.  
VK4ZMC—W. McCamley, Main Rd., Mer-oocchydere.  
VK4ZNL—N. G. Loury, 81 Prout St., Camp Hill.  
VK4ZSP—J. J. Pratt, 63 Chamberlain St., Tarradilly.  
VK5GQ—D. G. Quarrington, 11 Lassie Ave., Windsor Gardens.  
VK5LO—R. K. Westbrook, 42 Chillingworth Rd., Elizabeth East.  
VK5ZEW—J. C. Hilditch, 7 Galloway Rd., Christmas Beach.  
VK5ZJA—J. A. White, 3 Brookman Court, Blair Athol.  
VK5ZMM—M. J. W. Mitchell, Park Drive, Lucindale.  
VK5ZSH—S. G. Hill, 19a West St., Brompton.  
VK6QD—D. A. Giddell, 175 Wesponess Rd., Wensley Down.  
VK6OB—D. B. O'Brien, 2/44 Benfont St., Mt. Lawley.  
VK6SW—W. Stevens, 134 Hillview Tce., Bentley.  
VK7K—M. Muir, 126 Montagu St., New Town.  
VK7ZLD—W. G. I. Dowd, 33 Jubilee St., Young Town.  
VK7ZUW—R. B. Trollope, 89 Federal St., North Hobart.

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(Continued from Page 15.)  
sented by the Treasurer. Although the surplus for the year may appear large, the three certificates outstanding would have very nearly consumed that amount had they been certified as expected. There is a tidy sum in the Trust Fund, and I must thank the Treasurer for his great business acumen in continuing to bolster this with various F.E. trading transactions. It is with regret that I have to announce that the Treasurer can no longer carry on because of his private vocation. I feel the Institute will have lost a great deal by his retirement and I can only thank him for his years of endeavour and it is due to his efforts that the Federal Council is in a healthy position today.

During the year Executive held 13 meetings and attendances were as follows: W. Mitchell 12, M. Hull 12, D. Rankin 9, A. Seedman 9, J. Lancaster 4, A. Tinkler 2, P. Williams 3, R. Jones 1.

Mr Peter Williams, VK3IZ, at very short notice, assumed the duties of Federal Secretary in the early retirement of the late J. Lancaster from ill-health. I thank him sincerely for the easy way he has taken to assume onerous job in his retirement and I personally am very pleased to welcome him to Executive. I am very sorry that Jay has had to retire but his health is precarious, and I know that all Councilors who have had the pleasure of working with him will also join me in wishing him better health in the future and thank him for four years' service in what I consider the most difficult job in the Institute. I cannot let this opportunity pass without expressing my wholehearted thanks to the Vice-president, who helped me through a difficult period when the Secretary was ill. I also wish to thank the remaining members of Executive for their assistance during the year and some of them will again be serving the Institute during the next 12 months.

I wish to conclude this report by thanking all Federal Councilors for their continued support and loyalty during my three years of office. This year has been a quiet one in some respects but from a public relations aspect I feel we have made considerable progress in relations to push fire communications and installing a station during the Scott James home. The effect of even these two events will raise the Amateur image in the public eye. Next year will see some new faces in Executive and I wish the new members every success. I trust next year will see the in-

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(SEND CORRESPONDENCE DIRECT TO DIVISIONAL REPORTER NAMED AT PARA. END)

## FEDERAL EXECUTIVE, 1985/86

Y.R.S. Officer Rex Black, VK2YA.  
Contests Officer Jim Rumble, VK8RU

## ANNUAL SUBSCRIPTIONS TO A.B.E.L.

**OFFICIAL W.I.A. NET**

At the recent Convention in Melbourne it was agreed to re-open the old W.I.A. net. This network operated for several years very successfully but was dropped when the then Traffic Officer failed to carry on. The re-opening of the net will be largely dependent on Divisions appointing Traffic Officers in their Division to make contact with the station, VK3WIA. It is intended that the Federal Communications Manager will be available at the H.Q. and when this net is re-opened.

12345678910111213141516171819202122232425262728293031323334353637383940414243444546474849505152535455565758596061626364656667686970717273747576777879808182838485868788899091929394959697989910010110210310410510610710810911011111211311411511611711811912012112212312412512612712812913013113213313413513613713813914014114214314414514614714814915015115215315415515615715815916016116216316416516616716816917017117217317417517617717817918018118218318418518618718818919019119219319419519619719819920020120220320420520620720820921021121221321421521621721821922022122222322422522622722822923023123223323423523623723823924024124224324424524624724824925025125225325425525625725825926026126226326426526626726826927027127227327427527627727827928028128228328428528628728828929029129229329429529629729829930030130230330430530630730830931031131231331431531631731831932032132232332432532632732832933033133233333433533633733833934034134234334434534634734834935035135235335435535635735835936036136236336436536636736836937037137237337437537637737837938038138238338438538638738838939039139239339439539639739839940040140240340440540640740840941041141241341441541641741841942042142242342442542642742842943043143243343443543643743843944044144244344444544644744844945045145245345445545645745845946046146246346446546646746846947047147247347447547647747847948048148248348448548648748848949049149249349449549649749849950050150250350450550650750850951051151251351451551651751851952052152252352452552652752852953053153253353453553653753853954054154254354454554654754854955055155255355455555655755855956056156256356456556656756856957057157257357457557657757857958058158258358458558658758858959059159259359459559659759859960060160260360460560660760860961061161261361461561661761861962062162262362462562662762862963063163263363463563663763863964064164264364464564664764864965065165265365465565665765865966066166266366466566666766866967067167267367467567667767867968068168268368468568668768868969069169269369469569669769869970070170270370470570670770870971071171271371471571671771871972072172272372472572672772872973073173273373473573673773873974074174274374474574674774874975075175275375475575675775875976076176276376476576676776876977077177277377477577677777877978078178278378478578678778878979079179279379479579679779879980080180280380480580680780880981081181281381481581681781881982082182282382482582682782882983083183283383483583683783883984084184284384484584684784884985085185285385485585685785885986086186286386486586686786886987087187287387487587687787887988088188288388488588688788888989089189289389489589689789889990090190290390490590690790890991091191291391491591691791891992092192292392492592692792892993093193293393493593693793893994094194294394494594694794894995095195295395495595695795895996096196296396496596696796896997097197297397497597697797897998098198298398498598698798898999099199299399499599699799899910001001100210031004100510061007100810091010101110121013101410151016101710181019102010211022102310241025102610271028102910301031103210331034103510361037103810391040104110421043104410451046104710481049105010511052105310541055105610571058105910601061106210631064106510661067106810691070107110721073107410751076107710781079108010811082108310841085108610871088108910901091109210931094109510961097109810991100110111021103110411051106110711081109111011111112111311141115111611171118111911201121112211231124112511261127112811291130113111321133113411351136113711381139114011411142114311441145114611471148114911501151115211531154115511561157115811591160116111621163116411651166116711681169117011711172117311741175117611771178117911801181118211831184118511861187118811891190119111921193119411951196119711981199120012011202120312041205120612071208120912101211121212131214121512161217121812191220122112221223122412251226122712281229123012311232123312341235123612371238123912401241124212431244124512461247124812491250125112521253125412551256125712581259126012611262126312641265126612671268126912701271127212731274127512761277127812791280128112821283128412851286128712881289129012911292129312941295129612971298129913001

The 1965 Contest took place during the first week-end (C.w.) and third week-end (Ph.) in May, 1965, and the rules arrived too late for publication.

## S.W.L.'s IN NORWAY

A complete list of Norwegian SWL's with addresses has been received from the N.R.R.L. Any SWL's in Australia who wish to may obtain information on any address by applying through the official box number

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## FEDERAL OSL BUREAU

—Ray Jones, VK3RJ, Manager

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Another strange antenna graces the sky in Gawler, but this time it is much more scientific, for it is on 2 metres and the QTH is 52131. It is a vertical plane, and is probably called it plenty, but is a vertical cum horizontal cum circular polarised affair, completed with a special harness that enables phasing, stacking, extending, and when finished will be rotatable in both horizontal and vertical planes to keep tabs on the moon for bounce experiments. It is going abn. for the time being, and the pal EZF won't do phone, will do the C.w. end of it. Best of luck fellows, for there is a mighty lot of

Visits to this QTH lately have included Dudley IDQ, that eminent receiver construct

The S.E. Radio Group will hold a Convention on the Queen's Birthday week-end in June. Registration is to close on May 24th with the Secretary, Box 541, Mount Gambier. Accommodation will be arranged providing a deposit is forwarded. A tent will be erected at the Lake for those who wish to look after themselves. Indications are that quite a large number of W.K.M. boys will be making the trip, and whilst this information may be a bit beyond the stated registration date, it will act as a large inducement to not already booked, enable them to make their own arrangements. A really good action-packed and interest-

one of his dry-load of receivers, and when delivery was found that the screen supply for his linear was also gone. So now he has to operate like the rest of us peasants with no linear, or at least until he makes up an alternate supply. What is Phil using for a hearing aid at present? None other than a 1949 job that was out of the box, and having a b.f.o. but no control for it, found that his hot breath was enough to vary its frequency across the pass band! Mr. Larson E. Rapp please note.

Hear Bill SXB the other day describing his outfit to some glamorous DX call, when he introduced a "Funny World" as a horizontal-vertical piece of wire so high. More details of this would be appreciated, for it could lead to a story which is a "Funny World" and don't you know what Funny World is Bill? Anyway Kingstone has a worthy member in Bill who usually lives up any net he enters.

—Compe 32P (Poc. 588).

## TASMANIA

Our May general meeting was very well attended with about 40 members and several visitors present. Ted TEJ gave us a rundown on the Easter Festival Convention which by the way, was a very well organized affair. The lecturer was Mr. Max Burn, of D.C.A., who talked on Aircraft Radio Navigational Aids and followed by the excellent discussion and regional slide. The subject was very well received by all, and as our worthy president, Tom, said in his "thank you" speech, "One cannot help marvelling at Brodie's contemporaries, who flew vast unknown areas by the seat of their pants and the grace of God." Watch out, you may be going to get another go in the not too distant future.

Your VKY Council this year is the same as last year, and you read last month's notice. If you read these notes, and so are the offices they hold. Their jobs were sorted out at the April council meeting, and I am happy to report no changes. The President, Tom TAL was issued with an ultimatum—"Get an aerial up or there'll be a no confidence vote"—I think he is going to co-operate—we frightened him!

WLCEN is getting under way in VKY in a big way now, there are about 10 stations on the air, mostly in the south of the island, mainly in the Hobart area, and the Northern and North-western Zones are getting their 8-metre mobile rigs in operation. H.Q. Zone has an ex-taxi cab a.c. base station which should be installed in a few rooms before long, once the conversion is completed.

Now for the wings session, short and to the point this time. Not all the subs are in yet. If you have paid yours then thank you for your co-operation, if your dues are still outstanding then what about it, don't you think it is high time you did the right thing?

Associate member Mike Hooper (soon to have his call we had just "volunteered" (after some urging from "Raspuntin" TZ2) as co-ordinator for the Youth Radio Club Scheme. Mike, who works shift work, should be very capable of doing this job. I don't know, thanks to you, Mike, for allowing yourself to be talked into this position. We have one High School (Taroona) in the Hobart area, Zone, where the science master and some 30 pupils are very keen indeed, and I believe Laurobe School in the N.W. Zone also will be another station.

The congratulations of VKY Division go to the VKY boys for winning the 1964 R.D. Contest. I know it is late but it's better than never. It will soon be R.D. time again, so let us make an all-out effort in Tassie this year and see if we can take it next time.

Our clubroom fund has been revived again now that our I.T.D. commitments have been met, and it was very pleasing to see at the May meeting three members (not councilors) offer themselves as a committee. If anybody has any fund-raising ideas let someone know about them. We are about half way to our four-figure, so our own building is s-i-o-w-l-y becoming less than just a dream.

—VKZAS.

## NORTH-WEST ZONE

Once again another good roll-up of 17 members in our May meeting, and everyone agreed that it was a very interesting evening.

George TXL was the lecturer, and he gave us some good practical circuits of transistorized converters and power supplies. Not only that, but George had a working model of each, and they both worked fine business. Thanks George. There should be a lot more mobiles about from now on.

Had a letter from our old friend Basil, ex-7BL, at Spirit River. He enclosed his new QSL card in colour, which is supplied gratis by the Canadian Provincial Government. Tasmanians, please note. Basil gets plenty of contacts mainly because of his accent, and works mainly on 40 metres.

David TMS can be heard quite often with his new s.b. transceiver. Ken TAL has really taken to the air, this time in a plane. Believe he has been flying solo for quite a while. Bob TZAA has been confined to bed but should be up and about by the time he reads this.

Nice to see this zone well represented in the R.D. Contest results. I reckon there will be even more starters this year.

John JTF has settled in at his new home at Gwennie Park and is getting good results with long wire antenna. Max DMX is still very active on 80 metres and works ZL regularly.

All the best of DX. 7BKH.

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Write to your Divisional Secretary advising non receipt of "A.R."; do not write to "A.R." The Divisional Secretary should write to the Circulation Manager "A.R.", P.O. Box 36, East Melbourne, C.A. Vic, advising him of the problem. Unless this advice is received before the 8th of the month, a further month must elapse before the member can be re-instated upon the circulation list.

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## SUNSPOTS

For those interested, Zurich final analysis of sunspot numbers for 1964 indicated a yearly mean figure of 10.3.

During 1964, sunspots of both old and new cycle occurred in the Northern Hemisphere. However, insofar as the Southern Hemisphere is concerned the new cycle is considered not to have started until February, 1965.

The main number for January, 1965 (Northern Hemisphere) was 10.5 and predictions for the following months for both hemispheres indicated a very slow upward trend to the figure of 20 by July.

For comparison purposes the relative number at the time of maximum sunspot activity is in excess of 200.

—Eric Trebilcock (L3048).

## HAMADS

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Advertisements under this heading will be accepted on condition that the advertiser will be responsible for the payment of the advertisement. The Publishers reserve the right to reject any advertising which, in their opinion, is of a controversial nature. Contributions should be sent to P.O. Box 36, East Melbourne, C.A. Vic. by 8th of the month and remittances should accompany the advertisement.

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VKZBJ, 320w, overseas. "Collins" 75S1, 32S1, S18F2 Power Supply and Speaker, "Astatic" 10D Mic., with p.t.t. stand, "Vibroplex" auto key, "Heath" S.w.r. Bridge and "Gonset" Tri-band Beam. All had little use. £600 the lot. Contact VKZHX. Phone 80-4263.

**SWAN 120** Transceiver, s.b., complete with home-brew a.c. power supply. Modified to operate on 80, 40 and 20 metres. Now in current use. £150. Apply VK3ARP, 7 Kyora Parade, North Balwyn, Vic. (Ph. 85-1184).

**WANTED:** Someone to supply or build compact a.c. bench power supply for MR10 2-metre Car Phone. Circuit supplied. Ring 28-2326 (evenings), Melbourne.

**WANTED:** 2-metre A.M. Transmitter and Receiver, commercial type preferred. Converter suitable for Lafayette may be considered. Tony Swinton (VK3ZGA), 760 Waverley Rd., Glen Waverley, Vic.

**COLLINS 75S1 and 32S1** for sale. complete s.b. station with 240v. power supply. As new condition. £650. VKZBRW, W. Beveridge, 16 Murdoch St., Turramurra, N.S.W. (44-7701).

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**WANTED:** Cowl Gill Motor, suitable for Beam rotation. Also Electronic Keyer. R. Callander, VK3ZZO, 388 Warrigal Rd., Burwood, Vic. (Phone 28-2326).

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100V/0.4A ..... 9/9 each

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1N681 high back resistance

50V/50mA. VHF Germanium, 25

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Plus SCR's, V.H.T. Transistors, 50pA. Meters, Generators, etc. minimum S.A.E. for free Cat.

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- 5 ft. telescopic whip antenna.
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Size—7" x 3" x 2".  
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Imported three-speed.

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Wooden, plastic cloth covered cabinets.

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